

# VENTURE INVESTING AND CITY DEVELOPMENT- A LOOK AT SINGAPORE

by  
Vishal P. Modi

B. Com., M.A. Political science and economics  
Bombay University 1998

SUBMITTED TO THE DEPARTMENT OF URBAN STUDIES AND PLANNING  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
  
MASTER OF SCIENCE IN REAL ESTATE DEVELOPMENT  
AT THE  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FEBRUARY 2000

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January 15, 2000

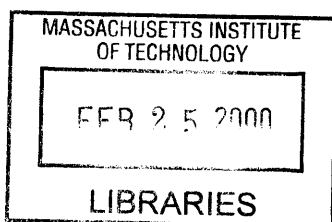
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## **ABSTRACT:**

The dual trends of globalization and technologization in the capital markets have altered the strategies of city states that wish to be financial/regional economic centers. This thesis examines venture finance in detail and looks at the case of Singapore repositioning itself as the center of venture finance in this regard.

First we understand the advantages of innovation and venture capital value proposition. We think about a general background to the world of venture finance and entrepreneurship. Then we develop a comprehensive venture-capitalists' framework. After this, we look at Bangalore and Glasgow, 2 striking examples of cities that reinvented themselves. We then try to develop a conceptual way to look at how cities will try to promote growth in the future. With these frameworks in mind, we analyze the situation in the Singaporean economy. We look at its background and its rise due to manufacturing. We show how Singapore is trying to change from its manufacturing roots and become a more 'knowledge based society.' We look at its financial sector in detail – its history, current overview and future and look at Singapore's efforts to establish itself as the venture finance hub. We think that there is enormous prestige associated with being a center of finance and accumulation. That is one of the main reasons why Singapore is concentrating on being a finance and venture finance hub. Plus venture finance has many sticky spillovers into manufacturing and into the local economy. It will make the Singaporean economy more healthy as a whole. This thesis concludes with a personal assessment of Singapore as a center of venture finance. Singapore has made a bold attempt to establish itself as the 'venture hub.' However, capital is not the main issue for Singapore. It needs to adopt a more risk taking attitude and be more willing to accept success as well as failure. In the end, this thesis explores the future of cities at large, looks at Amsterdam – the hooked up city, and looks at the broader implications of all this creativity and innovation on cities.

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Title: Senior Lecturer, Sloan School of Management  
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## **BIOGRAPHICAL NOTE**

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I would like to express my sincere gratitude to Mr. Deepak Parekh, Chairman of the Housing Development Finance group of companies for exposing to the wonderful world of cities at HDFC, where I worked in the treasury and real estate departments. It was due to that opportunity that I came across Saskia Sassen, whose non-conventional approach got me most interested in globalization, the strategy of cities and location of capital markets.

## **DEDICATION**

This thesis is dedicated to my brother Sumegh for sponsoring my MIT education, Professor Patel for always giving me the best advice, and for my two favorite people in the world – Dakshamasi and ‘big brother’ Vedantbhai.

## **ACKNOWLEDGEMENTS**

I would like to express my sincere gratitude to Professor John Preston for advising me, (It was a pleasure to work with Professor Preston – he threw many insights and comments on Singapore and venture finance by his experience advising the Government of Singapore and serving as chairman of the Massachusetts Technology Development Council and as director of the MIT Entrepreneurship Center.)

Professor Lester Thurow, Saskia Sassen and Josh Lerner for giving their feedback, Professor Don Lessard and Alan White at Sloan for arranging several interviews, Professor Wheaton, several friends at MIT for their support and friendship, Juzar Motiwalla of Kent Ridge Digital Labs, Mr. Phillip Yeo of Economic Development Board, Mr. Teo Ming Kian of National Science Technology Board, venture finance firms like Advent International, Urban Age, and several people that I interviewed in Singapore and in Boston.

**Initial Motivation**

My interest in this topic of financial centers and global cities was piqued by the leading sociologist on globalization - Saskia Sassen. I owe a large part of the underpinnings of this thesis to her work in this field. However, the dual trends of globalization and technologization in the capital markets have altered the strategies of city states that wish to be financial/ regional economic centers. This motivated me to explore venture finance and look at Singapore as a case study repositioning itself as the center of venture finance in this regard.

**Audience:**

This thesis would be of interest to students primarily of urban studies, sociology, geography or political science who wish to explore why nations (in this case city-states) should innovate. Into why cities all of a sudden all seem to be talking about venture finance.

To academicians who wish to look into how a city state that wishes to be a financial center uses digital technologies and its current position to catch this new wave

To urban planners and city consultants who wish to think about Singapore as an interesting case study.

To financial institutions and private equity firms who wish to develop their overall strategy and for those consulting firms that advise these players.

To practitioners at financial institutions who wish to decide their location strategy.

To rating agencies that are going to evaluate countries, cities and financial markets.

To any person who suddenly finds the 'Big Apple' (New York) out of fashion and wants to make sense of San Francisco as the hip new thing!

**Methodology**

Chapter 1 is an introduction to the complex world of venture finance. We will try to understand the venture capital value proposition through the context of innovation and its advantages.

Chapter 2 helps us develop a general background to the world of venture finance. First, we explore the different stages of small businesses. Next, we concentrate on various features of new ventures in information technology (IT) ventures, their critical success factors and entrepreneurship. Through exposure to the world of Venture Capitals and Entrepreneurship we will try to understand their functioning, constraints, and issues.

Chapter 3 summarizes the venture capital proposition. First, we take an exhaustive look at the different players in the buy side of the financial markets both on the public and private sides. Then we explore the venture capital industry. We begin with general features of the venture capitalist, develop a comprehensive venture capitalists' framework and then look at different exits for a venture capitalist.

Chapter 4 gives an introduction into technology in cities and looks at 2 striking examples of cities that invented themselves. We then try to develop a conceptual way to look at how cities will try to promote growth in the future. Then we go into the Singaporean economy. We look at its background and its rise. We look at Singapore's financial sector – its history, current overview and future. We then conclude with a personal assessment of Singapore as the center of venture finance.

This chapter concludes with the future for cities at large. It looks at cycles of creativity in cities. It takes a look at Amsterdam – the hooked up city. It then looks at the broader implications of all this creativity and innovation in cities.

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## Chapter 1

### 1 Introduction to the world of venture finance

**Venture capitalist:** venture capital investment is a vehicle for enabling pooled investment by a number of investors in equity and equity-related securities of companies (investee companies). The investee companies will generally be private companies whose shares are not quoted on any stock exchange. It can take the form of a company or an unincorporated arrangement such as a limited partnership. It should be noted that venture capital need not just be for a number of investors as mentioned above. There have been single family venture capitalists like the Rockefellers and Bill Gates.

#### 1.1 The Advantages of Innovation

Innovation has solid reasons for being promoted. It is simultaneously a source of new long-term jobs and a strategic weapon for the nation's technological competitiveness. It also improves the standards of living. Thus, acting on innovation is a tool used by governments for economical intervention. Innovation will not only improve the present industrial and economical environment, but also perpetuate these assets by preparing a favorable future. In addition, governmental policies can have a strong impact on a country's economic system by both setting the regulatory stage and by galvanizing the investments in period of downturns.

##### Create High-Value, Long Term Economy

Innovation creates employment. In addition, it powers the industrial world that it touches because it allows the other companies to buy new firms, or their patents, or just use their new products or services.

Innovation has a huge importance in the creation of the major technological firms of tomorrow. For instance, American entrepreneurial history is filled with glorious examples of numerous high-technology startups that became huge economical boost to the country. Some quickly obtain macroeconomic importance at national as well as international levels. It is interesting to notice that many of these current macro-technological firms benefited at that time from the support of the Venture Capitalist. Microsoft in the US is an example of this phenomenon.

##### Enhance a Nation's Competitive Position Through Small Businesses

Innovation is mandatory in the face of increasing technological competition between countries. There are many different ways of promoting innovation, from acting on the academic system to coinvesting with the private sector to increasing the aid to research in existing corporations. Singapore already has advanced public research organizations in high-technology like Kent Ridge Digital Labs. Nevertheless, it cannot be ignored that innovation comes first from small ventures and that existing industries are not sufficient to sustain the necessary rate of innovation imposed by competitiveness of international ventures.

### Improve Standard Of Living

By increasing the creation of new products and services, innovation improves the standard of living in the country and the world. It allows people access to cheaper solutions, or gives a solution for unsatisfied needs. The rate of innovation nowadays is so fast that over a generation people can actually observe several major technological changes. This speed increases the awareness of improvement.

### Conclusion

As we have noticed, the best way to promote innovation is through young technology ventures. Currently there are around numerous new ventures in Silicon Valley, or on the route 128 in Massachusetts. However, in Singapore and other parts of the world the innovation in high technology has stabilized especially in mature industries. Large companies resist change that obsoletes them. One of the main catalysts of revolutionary as well as mature industries around the world is the venture capitalist. Therefore, the Singaporean government is vigorously promoting venture capitalists in Singapore.

## 1.2 The Venture Capital Value Proposition

### More Profitable Ventures

The financing of a Venture Capitalist is a substantial leverage for a new venture. For example, 1995 revenue growth for venture capital-backed high-growth companies was 36.8 percent compared to 23.8 percent for non-venture capital-backed high growth companies. (Source NVCA 2, 1997)].

Samuel Kortum and Josh Lerner [44, 1998] demonstrated that venture-backed firms not only patent more, but also are significantly more likely to have frequently cited or litigated both patents and trade secrets. This is a way of measuring the importance of a patent.

### A Fast, Liquid and Flexible Investor

Venture capitalists are specific sources of capital. Their main asset is their ability to perfectly adapt to the world of new high-tech ventures. They provide financing with regards to new ventures concerns. It means first liquidity of capital. They inject a lot of capital quickly and with a minimum amount of liability for the entrepreneur. Their financing is also fast and flexible. Indeed, unlike many other funding sources, venture capital firms are usually very fast in choosing which project to fund, (around a month if not shorter). Afterwards they remain a flexible organization and are able to change quickly the initial plan if necessary. This provides an important competitive advantage for venture-backed firms versus non venture-backed firms. This is especially right in the IT market, where competitive advantage is more significant than anywhere else because of issues such as standard acceptance, or learning curves.

There are different type of venture firms – those that stay for the short run and those for the long.

### Selective and Demanding Support

Their only difference when compared to common funding sources, is a more reliable screening of projects which allows them to manage the risk of their operations.

Finally, they have a positive influence on the venture stage, by playing for the success of the firm overall. There are different kind of venture capitalists. There are some that only look at the short term – and then there are those that are in for the long haul. It is these long term oriented kind of firms that care more about management. They ask the staff for higher commitment. They ask them to commit financially in the venture in order to have an incentive to continue on through hard times. The entrepreneurs need to focus on their work and not be distracted with liabilities of debt. In order to permit entrepreneurs to focus, venture capitalists take participation and stock options in the ventures. This flexible way allows them to be able to have a power on the board as well as being able to disappear profitably in case of success. In addition, the experience curve in the private capital industry is very slow. When evaluating people and ideas, the volume of past projects is very important.

### A Committed Organization

Venture capital firms are more committed to the success of the venture than any other funding organizations; they have an entrepreneur's mindset. Actually, they are often general partners in a limited partnership with an investor. They use funding that does not belong to them, and for which they are liable too. On the other hand, if the funded venture is a success, their opportunity of profit is enormous through the IPO. Thus, VCs are very motivated because they have much to gain from success and much to lose from a failure. Often the characteristic of venture capital that is appreciated the most by entrepreneurs is the constant involvement.

### Offset risks

VCs can offset risks. For instance, venture capitalists introduce their portfolio ventures to their connections in the venture world, good lawyers, good CPA, efficient CEOs and professional workforce. They also help them with suppliers and corporate customers by using their name as a business card.

Beside their network, entrepreneurs benefit from their experience. We should not forget that for every accepted project they usually have auditioned hundreds of them. Therefore, they usually have a good vision of what innovation is and are ahead of the emergence of new trends, products or technologies on the market. When compared to entrepreneurs who are focused on a particular project, they have a better idea of what the IT world will be in a near future than entrepreneurs that are mainly focussed on their particular project. In addition, VCs corporations develop a network of bright people that help them make the right decisions. For instance, they benefit from diversified participation of technical experts, business analysts, and senior management.

They complete efficiently the entrepreneur's qualities. They bring to the firm some credibility towards other stakeholders in the business. Because of informational asymmetries, there is always something that is not objective in the evaluation of public high-tech new ventures.

Underwriters trust you more if they know you have a solid financial backing, and recognized professionals that monitor your actions. Finally, on the path of growth the history of a venture capitalist reassures other capital providers that you may need for the next stage funding.

## Chapter 2

### **General Background to the world of venture finance**

#### **2.1 The small and medium business in Information Technologies**

First we need to define our niche targets - high-technology firms. By high technology we mean Information Technologies (or IT) and Healthcare, Materials.

The Information Technology sector breaks down into communication and networking companies, electronics and computer hardware companies, information services firms, semiconductors firms, software, and others. It is, of course, the leading sector as to the invested amount, return rates and volume of new ventures.\* (PWC)

The Healthcare sector breaks down into biopharmaceutical firms, healthcare services, medical devices, medical information systems and other healthcare companies. It also has a growing value for venture capitals and it is a peak sector for development. However, Healthcare and Materials will not be our subject in this paper. In order to adequately look at Singapore we need to understand the dynamic that young ventures go through over their lifetime, as well as the specific features of the Information Technology market.

### 2.1.1 The Different Stages in the Life of Small Businesses

The following points come from various classical works such as Churchill's work [24, 1983]; or Greiner's one [18, 1977] and also the Que Sait Je about Venture Capital, [23, 1997].

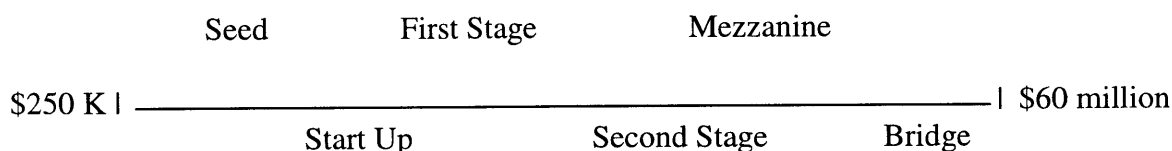


Figure 2-1: The Five Different Stages of a Young Venture from the Seed Stage to Maturity

|                   |                                |
|-------------------|--------------------------------|
| Duration:         | 1 to 5 years                   |
| Revenues:         | none                           |
| Annual results:   | losses                         |
| Investment:       | between \$1,000 and \$500,000  |
| Capital source:   | seed capital, R&D Partnerships |
| Management style: | entrepreneur or engineer       |
| Organization:     | informal                       |

Table 2.1: Seed, or Research Stage Features

Ventures go through various stages from the time they exist only as ideas and the goodwill to the time they become actual mature companies and, eventually, public ones. (refer to figure 2-1) Each path or timing is individual and depends on the venture, but in every case each of these steps keep similar patterns in size, diversity, complexity, management style, and organizational goals across the ventures. Each stage is also marked by a certain stability in the management of the venture, yet, there is growth in revenues, and is very different from the previous or the next one. In each of these stages success depends on different qualities of the team and on the environment. This is also why a public program cannot help each stage through the same uniform program.

Although, we describe below the high-growth organizations, we have to remember that the expected growth is not the same at each stage. If it is fair to expect that every year a start-up increases its revenues by 2, or 5, or even by 10, a mature company with a growth rate of 15 % is still a high-growth company. The transition between two stages is likely to be difficult, because it implies major changes in the management style. This is the main reason of a failure for young ventures.

|                   |                                    |
|-------------------|------------------------------------|
| Duration:         | 1 to 3 years                       |
| Revenues:         | up to \$2 million                  |
| Annual results:   | losses                             |
| Investment:       | between \$50,000 and \$1 million   |
| Capital source:   | start-up capital                   |
| Management style: | direct supervision of entrepreneur |
| Organization:     | informal                           |

Table 2.2: Start-Up, or Existence Stage Features

#### Stage 0: Seed, or Research

(Refer to table 2.1) This is step zero, which occurs even before the real start of the venture.

The venture has no legal status and often is only an idea. Its management is its only employees, they usually have a job outside, and develop their prototype during their evenings or weekends. The question is whether this team is able to realize its prototype and create a company within the constraints of time and cost and with the expected result. In this case the owner is the only staff member, and his main concerns are to increase his clientele and to sell his products, or services.

#### Stage 1: Start-Up, or Existence

(Refer to table 2.2) The firm completes product development and begins initial marketing, but does not sell commercially yet. Thus, its goal is to find customers. This step requires an important investment in order to cover the initial substantial losses. There are, of course, investments in the fixed assets, but also intangible investments, like initial registration fees, cost of hiring and training new employees, etc. Usually, if a company is not supported by a fund, the initial capital injection comes from the family or relatives of the entrepreneur. This is why such resources are also called the "Love Money". It is a very painful experience for the entrepreneur physically as well as mentally.

#### Stage 2: Expansion, or Early Stage or Survival

(Refer to table 2.3) By exiting the previous stage, the venture proved that it is a viable company with sufficient clientele. In the short-run, concerns are to balance gains and expenses, and in the long-run, to obtain enough liquidity in order to self-finance its own development. For the manager, it is a hard time, he must simultaneously demonstrate the rentability of his investments as well as invest in the future. It usually requires an additional injection of money in the company. The management structure takes shape and starts hiring qualified employees. Such company may grow and get to stage 3, or remain in stage 2 forever, and go out of business when the owner gives up or retires.



|                   |   |
|-------------------|---|
| Duration:         | 2 to 3 years  |
| Revenues:         | between \$2 million and \$20 million                  |
| Annual results:   | losses or break-even point                            |
| Investment:       | between \$500,000 and \$15 million                    |
| Capital source:   | risk capital  |
| Management style: | supervision of entrepreneur or professional executive |
| Organization:     | simple, but developing: mainly, sales department      |

Table 2.3: Early, or Survival Stage Features

|                   |  |
|-------------------|--|
| Duration:         | 3 to 4 years                           |
| Revenues:         | between \$10 million and \$50 million  |
| Annual results:   | 0 to 10% of revenues                   |
| Investment:       | between \$2 million and \$15 million   |
| Capital source:   | development capital,                   |
| Management style: | entrepreneur or professional executive |
| Organization:     | by function                            |

Table 2.4: Later, or Success Stage Features

### Stage 3: Later, or Success Stage

(Refer to table 2.4) The venture reached a stable threshold. At this stage, the entrepreneur has the choice between two options for growth: it can either be, success-disengagement or success-growth. In success disengagement stage, he decides to give up his involvement in the company, or to use it as a leverage for other activities. On the other hand, if the entrepreneur chooses to embrace the growth opportunity by throwing everything in the success-growth stage, he would have to prepare his company by strengthening its financial base and gathering suitable workforce. This is the time when he needs to radically change his management style, from an omnipresent manager to a leader with a vision who knows how to delegate responsibilities to his staff.

|                   |  |
|-------------------|--|
| Duration:         | 2 to 5 years   |
| Revenues:         | between \$40 million and \$100 million                           |
| Annual results:   | 0 to 10 % of revenues  |
| Investment:       | \$2 million and \$20 million                                     |
| Capital source:   | mezzanine capital, or development capital with a possible IPO    |
| Management style: | professional executives  |
| Organization:     | decentralized, divisonalized mainly between sales and production |

Table 2.5: Mezzanine, or Take Stage Features

#### Stage 4: Mezzanine

(Refer to table 2.5) This stage implies two major problems: fostering high growth and being able to finance this growth. Besides, high growth also increases the risk of mistakes. The main control is the ratio between the self-financing of the company and its debt. Organization is decentralized and may be broken down by division. The management of the firm demands detailed strategic planning on everyday basis.

Brand new qualities are required from the management at this stage. The ones that enabled to bring the venture to success so far, are usually unsuccessful. The owner must, especially, avoid two classical mistakes: the omnipotence syndrome when he tries to run too fast and runs out of cash, and the omniscience syndrome when he proves unable to delegate. This stage also involves much larger capital injections. This is also the time when the original funding organization may let another bigger organization take over. These new investors target a relatively fast exit process, around 3 to 5 years, and are often chosen for their ability to prepare the venture for its IPO. Since at this stage investments are safer, investors are not as much interested in big return rates (only 20-25 %) as the original ones were (expected return 30-50 %). This major expansion stage is usually leading to an IPO in the next 3 to 18 months.

#### Stage 5: Bridge or Maturity

(Refer to table 2.6) The venture is now a mature company in its assets, its size, its financial resources, and the skills of its management staff. Its concerns are to enjoy and strengthen its financial growth while avoiding the inertia of larger structures. For this purpose, numerous standard strategical tools, like budgets, strategic plan, management by objectives and cost-systems, are used.

The venture may enter the sixth stage, ossification. This stage is characterized by lack of innovative decisions and risk-averse behaviors. Then, usually, the company gets beaten by competition, and may reverse to earlier stages.

It is worth noting that there is lots in between these stages. Most ventures don't go through all these stages. Failure is always possible.

It is easy for firms to plan for the short term or for the long term. It is in managing the transition where there is the most tension.

|                   |                                     |
|-------------------|-------------------------------------|
| Duration:         | 3 years to undefined                |
| Revenues:         | over \$60 million                   |
| Annual results:   | N/A                                 |
| Investment:       | N/A                                 |
| Capital source:   | stock market                        |
| Management style: | experienced professional executives |
| Organization:     | decentralized, experienced, complex |

Table 2.6: Bridge, or Maturity Resources Stage

## 2.2 IT Ventures

### The Business

As we said previously, Information Technologies (IT) break down into software, communications and computer hardware systems. In order to design a suitable framework for innovation in IT to be launched, we have to be aware of the future opportunities in this industry. This is why I tried to outline different areas of IT where experts expect significant breakthrough in the next decade. The following comments are mainly inspired by Hambrecht and Quist [21, 1998] and by the published research of Price Waterhouse [6, 1998].

Software: first, we have the increasing use of 3D graphics for PC applications. Currently, the technology is mainly used and developed by computer games industry, but it is expected to be used more widely in software industry. Of course, the use of Internet has already proved to be popular and profitable. The opportunity of having many services at home and of reaching customers more directly should lead soon to having the access to the Internet from every desktop. Databases are used more and more in the today's applications. In many cases informational content takes precedence over the application itself. Besides, the amount of information available breeds a demand for effective screening and good management of data. The latest technological developments allow the industry to keep significant databases in mainframe memory. This is expected to cause a major change in the way databases and related applications are designed. Travel software and optimization of transportation networks had huge success with the increased demand in, for instance, airline reservation, as well as with the enhancement of corporate distribution networks. Image and voice recognition are the next steps after the multimedia stage. This is also due to the increased capacity of computers and networks that enable us to transmit, store and manipulate considerable amount of digital image data.

Communications and Networking: The optical fiber networks seem to be a very promising technological area. Optical switches cope with the current limitations of electric devices. Besides, the bandwidth that is so far delivered by optical network, is presently below the underlying capacity of fiber optics. Video Dial Tone (VDT) and, specifically, symmetrical video dial tone are likely to bring about another commercial and technical breakthrough. Remote Telepresence, like teleconferencing, remote instructions, and remote working environments, should create new needs and new forms of businesses. Likewise, wireless networks offer possibilities of using applications everywhere, even on the road. This tendency is even more emphasized by the parallel trend of increase in the scope of wireless networks, for instance, through global satellite telephone networks.

Computer Telephone Integration is expected to have huge consequences by integrating two separate networks, yet very interrelated. Asymmetric Digital Subscriber Line (ADSL), a technique that enables data transmission at high rates on phone wires. It would especially allow households and small businesses to have faster access to external networks. High-Definition TV (HDTV) is also expected to become another step forward and will allow new applications of TV. Network security will become a growing concern, as networks increase thus increasing the vulnerability of corporations.

Computer Hardware and Systems: The primacy of computer networks is expected to be the next trend for the future. Gigabit bandwidth networks will replace current networks. This will radically change input and output.

### Critical Business Factors

We can name 5 critical business factors: ubiquity, interconnection, bandwidth, popularization, and speed.

**Ubiquity:** people want to be able to enjoy the same application wherever they are and whatever they do. The trend is for the most portable and the most mobile. They want to be able to bring their laptop everywhere, thus devices become smaller and smaller, lighter and lighter. People nowadays want to be able to use their computers and have the same access to networks as if they were at home. Companies must customize their products to be "network friendly", and networks must be designed to play more and more important role.

**Interconnection:** A big issue in IT is the multitude of standards at every level. However, users want to connect to networks without thinking about the standards. This requires a huge effort from the ventures to become compatible with different standards. Usually, it is accomplished by wise strategic partnership between young firms that complete each other's products or services. The issue of standard is also very present in respect to geographic portability, because prevalent standards differ on each continent.

**Bandwidth:** Unlike processing power, available bandwidths evolve unevenly and vary geo-graphically. Its recent increase in some places has drastically increased the opportunities for innovative high-technology solutions. On the opposite, its static character is a bottleneck for domestic innovations that should raise redflags for governments.

**Technology:** The main drivers for innovation nowadays are technology. Popular usage increases the demand for even more innovation – then user-friendly design, entertainment side and personal access to information and services are the factors that drive IT market.

**Speed and market share:** A lot of critical factors are tied to speed. First of all, we need to describe briefly the IT industry in order to understand the role of speed factor. We can describe the IT industry as very competitive. Unlike classical industries, marginal costs appear to be very low and allow increasing returns. Besides, technical barriers to entry are also very low. With the change of speed in IT, and the emphasis on these technologies in academic and public research environments, past experience in this industry does not grant any technological advantages for further development. The product life cycle is usually very short and varies from 3 to 10 years from the introduction of the product in the market to its complete replacement or withdrawal. Another feature is high sensitivity of cost structure to the volume of production. There is a usual misbalance in the IT industry between the large initial cost of design, equipment, etc., and the relatively low marginal cost materials, production delays, and labor force. This ties higher profits to higher production scales. A good example to illustrate this is the manufacturing of electronic chips or electronic devices. Besides, other factors weight towards higher production scales. We have, for instance, the learning curve factors, that cause approximately 20-30 % reduction in information product cost for doubling in experience measured by the volume of manufactured products. More generally, a lot of advantages

are related to a higher market share. Among them, according to George Young ([58, 1985]) the S-shape evolution of the sales over time demonstrates the impact of network externalities. They are mainly of two kinds: one is a struggle for standard-acceptance and portability. There are numerous standards in the market. Even at each phase of computer design different standards prevail and compatibility with them cannot be avoided without endangering the scope of one's market. Microchips have various standards (Intel, AMG, Sun, DEC), operating systems have various standards (Windows, Mac, Unix), applications have various standards (Word, Excel, Lotus, Postscript, GIF, etc.), and likewise, this is true for networks, hardware, etc. Standard is often considered the strategic feature, and established companies use them as barriers to entry. By expanding their market share, technology ventures manage to impose their new standards. Their impact is then leveraged by the action of all the other applications in related areas that are forced to be compatible with the imposed standards and thus make them even more compulsory to the public. The other interesting factor is that being famous is really an important asset for an information technology company. For instance, AOL did not have a particularly great product – however, it got a lot of press for a month when its systems crashed. This accidental mishap threw the AOL brand even more into the limelight. It captured the minds of people.

Even unconsciously, people expect an extensive customer support from such a company. Simple concerns like an immediate update when standards change, or a continuous development with new releases that fixes bugs, or any other additional options may be very demanding requests to be really offered by companies with a minimum size, and a minimum market share. This causes war of standards and credibility. In both cases we have seen that market share is the barrier to entry, and that it is rather a strategic barrier than a technological one. This is also why, in order to enjoy the increased threshold in sales, companies need to obtain a critical market share early in the life cycle of the technology. Otherwise, they will always stay behind, even with very aggressive pricing policy. This demonstrates the importance of the first-entry advantage. Firms need to be aggressive at a very early stage by obtaining a substantial market share and keeping it all along the way. To do so, they need substantial financing to support their tremendous growth rates. Keeping the first entry advantage requires also from the company to be fast enough and react to any changes in the technological environment as well as always respond in time to growth expectation.

#### Financing Needs

We have seen that IT firms require major initial cash flow in order to embrace strategic goals and yet, the classical banking system does not meet their needs. IT firms are often characterized by very few physical assets, or none at all, and their only value is in their ideas and goodwill. Thus, it is hard to determine the value of not only patents but also firms with only intellectual property and no patents.

The evaluation of human assets and ideas is not easy and is very time consuming for banks. Besides, if the company takes loans, then its potential gain is capped, and the importance of the success does not matter as long as the venture can pay its bill. Consequently, it is hard to obtain substantial cash injections that are necessary to embrace the growth and face the competition. The IT business with high initial investment and potentially high returns is a high-risk investment thus banks do not want to commit to, at least at the early stages, in order to avert potential risk. Other financing models are more appropriate to support IT ventures.

### 2.3 Entrepreneurs

Entrepreneurs' concerns are usually very different from corporate or public concerns. The main consequence is the remaining misunderstanding between public authorities and entrepreneurial world. It is thus important to understand the main concerns of entrepreneurs of technology-based start-ups. For the success of a new venture there are very important elements that are necessary to gather. Most of these elements of research come from the MIT Entrepreneurship Laboratory.

The diversity of backgrounds of the team is one of them. This adds to the company's richness and polyfunctionality. In the diverse team the importance of the sales people is too often underestimated, yet, at first, a venture is created to be profitable, and the main inflow of money comes from sales. For instance, 80-95% of "purely technical" spin-offs fail, while 80-95% of MIT teams that combine marketing, business and technical skills, succeeded. Being accepted by society is an important issue. It breaks down into different issues.

Accepting failures is a strength of the US society compared to Japanese and German ones. Accepting failures without making them final, allows entrepreneurs to start again. If Singapore is serious about entrepreneurship, it has to change its attitude towards risk.

By not accepting to reemploy failed entrepreneurs, by prohibiting one-time bankrupted entrepreneurs from finding any financing dramatically increases the risk of starting a new venture. It does not take into account the additional experience of the entrepreneur even in the case of failure. This must not be mixed up with a loose enforcement that will breed abuses of the bankruptcy option. It is a reasonable trade-off to leave open windows of opportunity for potential entrepreneurs.

It also requires a shift in Singapore's laws and attitudes towards bankruptcy. If you start a company in London or Paris and go bust, you have just ruined your future. Do it in Silicon Valley, and you have just completed your entrepreneurial training. Moreover, in America, the existence of a mobile labour pool makes it easier for promising young firms to attract talented workers. And would-be entrepreneurs are less afraid of failing because they know it will be easier to find a new job if they do. (Economist, January 1997) Singaporean entrepreneurs should feel no embarrassment in moneymaking. In the United States, success is celebrated and failure is not punished. Singaporeans should get over their stigmas of failure and equally important their stigma for success. One can gauge this by looking towards which firms the brightest graduates are gravitating towards. For

example, the brightest graduates in the United States go to start up firms while in Singapore it is the big corporations.

The flexibility of labor market can also greatly reduce the risk of creating a venture. For instance, if the labor market is not flexible, the entrepreneur may initially be concerned with never being able to have a successful corporate career later in the case of failure. Besides, the team, he wants to bring together, may be scared to risk their current job opportunities, if they are uncertain of finding other, equivalent ones, in case of failure of the project. It is very hard to fire somebody. Contrary to the US labor market where the hiring is at will, and thus, by default the employee can or may be fired whenever the employer would feel like it. This causes Japanese and German entrepreneurs to consider labor to be a fixed cost rather than a marginal cost. This difference makes the decision of creating a company even harder for potential entrepreneurs. Singaporean entrepreneurs should feel no embarrassment in moneymaking. Being an entrepreneur is motivated by having some kind of freedom as to one's agenda, and also by having potentially huge gains in a very short time-period that are not capped as they would be in the corporate world. Shrinking this window, or criticizing profit-making activities is a direct hindrance to entrepreneurs. It removes one of the entrepreneurs' biggest motivation and rewarding for risk in case of success. To encourage venture capital, one needs to see the possibility of getting rich even in the event of failure the first or second time. And if one does get rich, one need not be stigmatized for doing so.

Being able to protect its market with patent or copyright is also a classic concern of entrepreneurs, especially if he committed for important amounts of money. It requires a fast mechanism for filing patents as well as a strong enforcement. Exiting the owner's seat is also an important discussion. While some relish the prospect of going public and selling their stake, others don't. First calling a professional CEO at the head is a hard step and considered as a loss of power. Going public is risky and costly for entrepreneurs and some entrepreneurs do not trust shareholders to bring their venture to success. They fear a too-short term profit-oriented vision, while they would prefer long-term strategic plans.



## **Chapter 3**

### **The Capital Market**

New ventures have different options to obtain their initial capital or the required capital to move to the next stage of development. Let us examine these options and find out which ones are the most suitable for the new high-tech ventures. We can call this also the "buy-side" of the financial industry. For instance, venture capital firms are on the "buy-side" because they are characterized by having a pool (or fund) of money to spend on buying assets of operating companies.

The buy-side breakdown is shown in the figure 2-2. Generally speaking, buy-side firms make money when they can sell their equity to another private investor, a corporation or to the public markets for more money than they paid mutually. Descriptions of each segment of the buy-side are included below. A good summary of their suitability for funding new high-technology ventures is provided in the first part of the good analysis from Leslie Jeng and Philippe Wells [22, 1998]. As we will see, bank loans are not the most suitable capital resource for early-stage ventures. Therefore, the demand for high-capital injection in potentially high-margin ventures developed a parallel source of capital, the private equity market.

#### **3.1 The Public Side**

##### **Banks**

Depending on the local laws that regulates financial life, the banks are likely to play an important role as financial intermediaries for new ventures. For instance, in the countries with a bank-centered financial system that allow banks to hold equities and simultaneously provide loans, like Japan or Germany, the banking system is well developed and plays a major role in the financial life. Hence, loans and leveraged buy-out are more common. However, in other countries where the system is more stock-market-centered, like in the US, where banks are prohibited from holding equity, the role of banks is less significant, and the potential IPO is the main source of value for a company seeking for capital. But even in Germany and Japan, debt-based finance is not the main source of financing for start ups. Since banks are limited in their revenues from the venture to the interests and the principal the loan, they will not push the venture to do more than what is needed.

##### **Captive Funds**

Funds are labeled "captive" if more than 80% of their financing is derived from one source. Usually they are subsidiaries of banks. In France in 1995, captive funds accounted for 37.1% of new funds raised. Their prevalence in Europe is one of the biggest differences with the US.

### Corporate Investing

Alternate means of financing is through corporate sponsors. This is a recent but growing trend in the world of high-technology corporations. Intel Corp., Microsoft Corp., Cisco Systems and a host of other big technology firms have become Silicon Valley's biggest venture capitalists. Intel usually spends \$1 million-\$5 million for a minority stake in a firm that is about one year away from going public. Microsoft has spent \$440 million in the period 1994 to 1997 on minority investments in 22 firms. Microsoft spent \$750m buying or taking a stake in small Internet firms in 1996. Cisco Systems a network-equipment maker, has invested about \$100 million in 15 firms over 1994 to 1997. Cisco, which has bought or invested in 25 companies in 1994 to 1997, did another dozen deals in 1997. 3Com and Bay Networks, Cisco's main competitors, have also been buying companies left, right and center. And in the period 1996 to 1997, the venture arm of Softbank, a Japanese firm, has invested \$353 million in 55 computer and Internet firms. (Economist, 1997) For Softbank this strategy has been very successful. Softbank's Yahoo alone has a market cap of \$92.924 Billion in January 2000.

Corporations prefer to let young ventures run risky advanced research development program, and the official corporation laboratory takes over when the project outcomes are known better. This is a way of managing risk by keeping a real option open. Often backed ventures are created by people related to the company. On the other hand, corporations also like to invest in external new ventures that are related to their area. Thus, a way of protecting themselves against potential competition is by monitoring the evolution of research and technology. Often corporations provide not only money, but also once space, access to resources (other than cash), and proximity to like-minded technologists and marketers. Corporations usually create separate organizations to conduct this venture capital business. For instance we have Cisco, or Lucent Venture Partners, Inc., or Motorola Ventures. However, this governance model can reduce the chances of success for start-ups. Numerous works were done to explain that young ventures might undergo various issues: legal difficulties, if corporation has access to ventures' proprietary information, or impossibility of operating autonomously, slow approval process, etc.. As a conclusion, Paul Gompers and Josh Lerner demonstrated that corporate ventures had equivalent results to the venture capital ones, when there were similarities in the business of the corporation and of the venture otherwise performances were not as good [15, 1998].

### Traders

Divisions within sell-side companies (merchant banks, commercial banks, and investment banks) that control and invest huge sums of money into public markets (stocks, bonds, commodities, currencies, etc.), by taking bets on market fluctuations. However, this is a true source of capital for companies that are quoted on stock markets. In order to become public a company needs to demonstrate a certain maturity and stability. This is possible only to later-stage ventures.

### Hedge Funds

Hedge funds are limited partnerships, or corporations, that buy and sell public market instruments (stocks, bonds, commodities, currencies, etc.), taking bets on market fluctuations. They are usually unconventional funds, that use strategies other than invest long positions in bonds, equities (mutual funds), and in (money market fund). For instance, they can use short selling, arbitrage seeking, trading options or derivatives, using leverage, investing in "unrecognized, undervalued" securities, or attempting to take advantage of wide spread mergers or hostile takeovers. They set order usually their strategy in order to hedge risk. Another characteristic of hedge funds is that they tend to be specialized, because professional investors understand strategies and typically invest in a fund because of its manager's expertise in a particular investment strategy. The size of these funds ranges from a few million to several billion dollars.

We may want also to cite mutual funds that have a much more regulated investment strategy towards short-selling and options. However, the future performance of mutual funds is highly dependent on the behavior of the equity markets. If we compare equity market to the ocean, then mutual funds can be compared to a boat, while hedge funds with highly predictable performance look more like submarines.

We also want to introduce a fund of funds. It is a fund that mixes the most successful hedge funds and other pooled investment vehicles. Such funds allow to enjoy the expertise of the different funds and, therefore, to deliver more consistent returns.

### Leverage Buyout Firms

Leverage buyouts forms are limited partnership, or corporation, that purchase a controlling interest in one private or public firm using their own capital combined with (leverage) as a debt financing from third-party banks. The goal is to take over assets or operations of the acquired company. New management is typically put in place and the company is often taken in a different direction. The size of these transactions can range from \$1 million to many billions of dollars.

### Asset Management Firms

Asset on management firms represent highly diverse groups of limited partnerships, or corporations, managing between \$5 million to \$20 billion, focusing on diversified investment strategies with public assets (equities, bonds, commodities, currencies, etc.).

### **3.2 The Private Equity Market**

The world of the private equity market is characterized, first, by important informational asymmetries. Unlike the public equity world, there is no need for disclosure and there are no available studies of the firms by business analysts. Thus, funding involves financial constraints, such as evaluating the firm and its potential value, as well as monitoring it. This can be only accomplished by intermediaries that sell their expertise in evaluating firms to bigger investors that confide them with their money. Usually, the legal structure is a limited partnership or a fund.

#### **High-Net-Worth Private Placements**

High-Net-Worth Private Placements describe a situation when a sell-side company organizes a group of very wealthy individuals, corporations, asset management firms, and/or pension funds to make a direct investment into a private company. The amount raised from these sources is typically between \$5 million and \$50 million. In essence, the sell-side company is enabling the investors to bypass the middle-man (venture capital or equity investment firms). The downside is that, first, the company into which the money is invested doesn't benefit from the expertise of the venture capital firm, and, second, the sell-side company requires a substantial fee for its services.

#### **Venture Capital Firms**

Venture capital firms are limited partnerships, or corporations, that typically invest between \$250 thousand and \$20 million in the seed to later stage private companies in exchange for equity. The venture capitalist sit on the board of directors and bring with them their business experience, industry and, financial expertise, and also networks to support the company. They develop a reputation and by virtue of their reputation, fame, expertise, etc manage to get a first look at the idea and deal flow.

#### **Angels**

Angels are wealthy individuals with operating experience who typically invest between \$50,000 and \$1.5 million in exchange for equity in a young company. They often sit on the board of directors contributing their experience and advice in guiding a company through the difficult initial stages of growth.

#### **Management of Buy-In Firms**

Management of Buy-In Firms are outside investors that purchase a controlling interest of a company, but who leave management unchanged.

### **3.3 Venture Capital Industry**

#### **3.3.1 General Features of Venture Capitalist**

##### **A Flexible and Motivated Organization**

Venture capital is small but dynamic structure, it has a quick and accurate decision making staff that bases its choices on a tied symbiosis with a network of experts.

First of all, venture capital has a small management staff. It is often a partnership, with 3 or 4 partners and as many assistants. Even in big venture capitalist funds the number of partners rarely goes over 10 people. Such ventures usually have very limited administrative support with and accounting stage. They compensate their shortage in workforce by the intensive use of outer services such as consulting firms, business analysts, marketing specialists, lawyers, and so on. Their purpose is to limit their overhead costs and increase the flexibility of the firm that can choose whoever provides the best service at the present moment. In addition to this flexibility there is a limited number of members on board who make investment decisions. Usually one or two representatives of the investors are on board as well. Venture capitalists have a flexible decision making process. They are also very dynamic and can be characterized by their very active and aggressive marketing strategy. The market is very competitive, and a winner is wanted by everyone. Thus, venture capitalists are eager to contact anyone who is likely to have new projects. They market their service in universities, within corporations, in specialized directories, at special events, and on networks.

Their main strength, besides their individual qualities, is their impressive network. They have high-quality technical advisers in any field, as well as financial advisers, and a network among major investors.

An important criteria that differentiate the venture capitalists from other private capital sources (like business angels), is in a legal difference between the fund owners and the fund management team.

### 3.3.2 The Relation with Other Stakeholders

The venture capital funding is the gathering of at least three organizations: a big investor that tries to invest his capital with higher expected gain than the market; a new venture that tries to find some capital to finance its ideas; and the intermediary, the venture capitalist. This is why a contract with a venture is always a fine equilibrium between the venture capitalist, the entrepreneur, and the investor (see Black & Gilson, [9, 1997]). Each party has developed tools to optimize its own gains and remind the others of their responsibilities. Likewise other parties like the underwriter in case of an IPO

As to the legal matter, venture capitalists are mostly partnership with the investors. Paul Gompers and Josh Lerner [25, 1998] specified that VCs compensation entails a fixed fee based on capital, or assets under management (around 2.5% of investors initial commitment to the fund), and a percentage of the profits (often 20%), also called a "carried interest". The initial search of investors on a project is called the "capital calls". Among other concerns, the entrepreneur would also like to be protected against the danger that the venture capitalist serves its own interests and not those of the entrepreneurs. If entrepreneurs and venture capitalist have almost the same concerns at the beginning of the contract, the closer they arrive to its end, the more different their concerns become from each other. On the one hand, the entrepreneur tries to have a successful firm with a long-term vision, while the venture capitalist tries to optimize his profits through the exit mode with a short-term vision. This may lead to differences in the choice of the exit mode, as well as its timing. This is a reason for the lock-up agreements between the venture capitalist and the entrepreneur.

Venture capitalists also have "lock up" agreement with the underwriter institution in which they promise to refrain from selling their shares for several months after the IPO. This is to prevent the venture capitalists from overrating portfolio while selling them to the underwriter. When venture capitalist decide to liquidate its position, there are two alternatives. First they can sell their shares on the stock market and distribute cash to limited partners. However, more often they distribute shares to each limited partner and, frequently, to themselves as compensation. Then there are no SEC interventions. It does not fall either under the law of restricted sales by corporate insiders, because limited partners are not considered insiders. Therefore, the venture capitalist can dispose of a large block of shares more quickly.

Besides, tax motivations can be also an incentive to distribute shares. Investors may be willing to postpone these taxes by receiving distributions in kind and selling the shares at a later date. Finally, selling the shares, instead of distributing them may have a bad influence on the stock price.

### **Different Types of Organizations**

There are different types of venture capital funds inside the same country as well as they may have different importance across countries. Usually the preferred structure implies a single layer of tax.

**Independent funds:** they are usually organized as limited partnerships with the venture capitalist as a general partner for a 10-year period. This is the most common organizational mode. In this case, the venture capitalist in fact, plays a role of intermediary by recommending the new venture to the major investor. The investor usually finances at 80%, versus 20% for the venture capitalist. Usually at the end of the contract, the venture capital firm either redistributes some shares to the investor or sells them on the stock market in order to pay back to the investors. In the US, they are the most important group. The venture capital firm's stage receives a fixed income in accordance with the size of the fund, as well as 10% to 20% of the gains from the operation. Usually, in the US venture capitals all belong to the NVCA.

In Europe they mainly belong to the EVCA. There are other forms of venture capitalist, called "secondary" partnerships, and specialize in purchasing the portfolios of investee companies that are already investments of an existing venture capitalist.

**Corporate groups spin-offs:** the main examples come from the high-tech corporations, like IBM or Apple. Because of diverse hurdles due to the difference of goals between the big corporation and the new venture, the trend moves to a corporate preference for using independent venture capitalists. "SBIC": this type of organization appeared due the American Small Business Law of 1958 to promote small new ventures, especially, regional ones. The law was renewed by 1994. It is a model of partnership between the public and the private sectors. The SIC are mainly monitored by the Small Business Administration, that issues them a certificate. They are mainly private, but benefit from the long-term loans with preferential rates that are warranted by the government. They represent 10% of the resources of the American venture capitalist industry.

**Syndication of Venture Capitalists:** being a part of a network of other ventures is primary as well. In order to mitigate the risk of venture, venture capitalist have a need for syndication, co-investing with other professional venture firms. Thus there are more capital resources for the investee company. Each firm will bring some competitive advantage. We can, for instance, imagine that the two venture capitalists are two experts of the software market in two different European countries.

### **2.3.2 Venture Capitalists' Framework**

A venture capitalist has the following concerns: how to give an accurate initial judgement about an idea or an existing venture, how to invest in a way that they can keep a certain control over the management of a new venture, and how to exit in a profitable way, as well as in matters of cash flows of reputation.

#### **Evaluating an Initial Project**

Evaluating an initial project, the selective screening of projects by venture capitalists, is a famous barrier to entry. Only 1% of the applying projects go through. We also need to understand the responsibilities of a venture capitalist. He commits to major investors which play an important role in managing the capital. In addition, he commits his new venture for long-term contracts. We should not forget that often, the younger the firm is, the riskier it is to evaluate its chances of success.

Thus in the initial screening there are four major critical goals for the venture capitalist.

1. Assessment of entrepreneur and his team: this is the first concern. Most of the success stories are rather tied to the team than to the idea in itself. The path to a mature venture will be painful and hard for the team. It is very important for the venture to be sure that the team will not give up along the way. Yet the team is not everything - It is worth noting that out of 40M venture capital deals, only 8 huge successes.
2. Assessment of product and market: usually new propositions are targeting a market that does not exist yet, because of the innovative character of the product. For instance, most of the new services on the web are not using an existing demand, but only a potential market of customers that are still unaware of their needs. In a certain way, the entrepreneurs create their market, by making their services available. Anyway, it is difficult to make any forecast, as about the future opportunities of the new firm before the actual availability of the service.
3. Assessment of financial plan: the financial plan is the very focus for any venture, since every venture during its lifetime starts with a period of losses and needs to learn gradually how to become profitable and self-financed.
4. Assessment of a Business Plan: it is the best way to assess a team and a project. A business plan describes how the entrepreneur sees his potential market, his development, and, even, his exit process. A business plan is of primary importance, in order to warrant that the venture capitalist and the entrepreneurial team start out with the same vision.



## Monitoring and Investing

When the choice is made, the venture capitalist has just started its tremendous work. He has a long-term commitment and needs to keep his business at a value that was its original estimate. The only way to accomplish this is through thorough monitoring and collaboration with the entrepreneurs. There are different tools for the venture capitalist to keep some decision power inside the firm, even after having already invested in it. The purpose is to keep an option that gives a repressive power to the venture capitalist in case of disagreement, or profitable gains in case of success. In any case, monitoring should safeguard the venture capitalist against substantial losses. Of course, there is a variety of monitoring mechanisms and tools:

1. Through business plans that require the disclosure of many aspects of the projects, currently and in the future.

This is a way in which the road towards initializing negotiations is taken.

1. Keeping a conditional decision on identifying a syndication partner who would agree that it is an attractive investment, would allow the venture capitalist to keep an open option for further negotiations.
2. Through different types of equities with numerous restrictive covenants and representation. Usually, they can be found under different forms, such as preferred convertible stocks, or convertible bonds. The main goal is to remain a senior debtholder as well as keeping the opportunity to move to a non-fixed income security, e.g., through a conversion into regular stocks. The most common case is, the preferred stocks that offer the following advantages for the venture capitalists that make them a perfect tool for monitoring:
  - a minimal dividend per year that is compounded from one year to the other, if there is no profit to distribute;
  - a waiving of any additional covenant. There is no way for the venture to bargain these equities against additional concessions from the venture capital firm.
  - the necessity for the entrepreneur to ask for the venture capitalist authorization before:
    - taking shares in other companies or creating spin-offs;
    - franchising part or all the capital;
    - offering loans or advancing sums to other companies or people.
  - a right for disclosure of the following documents:
    - balance sheets, profit and loss accounts, statements of accounts, reports of the financial auditors;
    - minutes of the board meetings, and annual meetings;
    - copies of the tax declaration of profits and annexes in the same time delays the administration
    - any documents related to the business, budget planning, quarterly reports on financial situation, budgets.

3. Another way of keeping a relative control is the limited liability and the time-limited partnership (7-10 years) with the possibility to exit the contract before each cash-flow

date: generally, three main cash flows dates during the first ten years are  $t=0$ ,  $t=3$  years,  $t=7$  years. It is often demanded that the venture has reached specific stages of its evolution, characterized by specific results for each of the additional injections of capital

4. In its original covenants the venture yields a lot of power to the VCs. Usually, previous powers, the VC can fire the CEO or hire the workforce, and impose its choices for strategic partnerships.

The venture capitalist also seeks a way of not being taxed on capitals, because its main role is a go-between. He receives the main part of his funds from the outer investors, and gives them to the new venture. In exchange, they receive profits from this venture that they need to redistribute to their investors. If each stage of the process is affected by the corporate tax, there is a loss in profits that has no value added. This is why they try to choose structure that limits the corporate tax as much as possible. The limited partnerships in this model, or companies that seek gain have a special status from local governments.

#### **The Different Types of Exits for Venture Capitalists.**

Signing a contract with a Venture Capitalist, also means for the entrepreneur that he is to think of a way to leave the partnership. The exit process is also the ultimate goal for the venture capital firm. It is the time when he can make a success out of the investment operation. Thus, the venture capitalist pays a lot of attention to this last stage.

**IPO:** This is the most classical way in the US. The introduction to the market offers a big opportunity of gain for the Venture Capitalist, but overall an IPO is the most glamorous and visible way. It is very attractive to the venture capitalist because it allows him to make a great advertising of his capacity of managing young ventures. The confrontation of the venture with the stock market is the best way to have an objective assessment of the investee's value. The stock market is also for a young venture, a huge source of capital that can support their further need for high-growth. However, for entrepreneurs there are also drawbacks in going public. Among other risks, the requirement of disclosure is strategically risky and costly to operate properly. The requirements for officers, lawyers and CPAs are not either easy to carry out for a small entity. Besides, the passage from an asymmetrical information state to a public state may cause the market not to trust you anymore, and your stock may sink dramatically after a while. For some ventures that are introduced to the market too early, an IPO happened to be fatal.

It is very important to not only have a good IPO, good technology but also good management of technology. For instance, most Israeli IPOs have both good technology and IPOs but poor management. Most of their stocks trade at below their IPO price.

**Trade-sale, or mergers and acquisitions:** Another way of exiting is that contact with the VC be acquired by another company or to merge with it. It represents the most common and the most successful type of exit for venture investments. For example, Microsoft acquires a lot of young ventures in Silicon Valley. To merge or be acquired may be a good strategy, if there is synergy and savings in, for instance marketing, manufacturing or distribution. In the trade sale we also have the case of the **Management Buy In (MBI)** when an outside investor purchases the controlling interest in the company but leaves management unchanged.

**Leveraged Buy-Out (LBO)** is a way of exit that is much more usual in Europe than in the US, where it is very rare. It happens when the controlling interest in a company is purchased using a significant amount of borrowed money, usually 70% or more of the total purchase price. We have then two particular cases: Management Buyout (MBO), when the company is going private through management's purchase of all outstanding shares. This is usually not possible for very successful ventures where entrepreneurs can never purchase back all the shares

**Employees' Buy Out (EBOs)**, is the case when the employees are purchasing the outstanding shares of the company for it to go private.

## **4 Innovation and Cities**

One can think of the city as a giant incubator of sorts, of a crucible of change and innovation. The city is continuously changing with interaction, communication and collaboration.

### **Two Interesting Examples of Cities that reinvented themselves**

#### **The Information Services-Based Economy of Bangalore, India**

Since the 1950s, Bangalore, the capital city of India's Karnataka State, has invested heavily in the state-owned industrial sectors of machine tools, electronics and telecommunications. Companies such as The Indian Telephone Industries, Hindustan Machine Tools, and Bharat Electronics offered world-class training programs and a job for life.

In the 1970s, the private sector started to tap into this pool of technicians and skilled engineers, all well trained at the city's many research institutions and factories. Both private and public-sector industries increasingly subcontracted the manufacture of electronic components to small workshops set up by engineers or skilled workers formerly employed by the larger state-run factories who took advantage of various tax incentives to start small industries of their own. As a result, by the 1980s Bangalore had become the country's premier center for the manufacturing of electronic hardware.

In the early 1990s, however, growth of the kind of engineering and manufacturing firms that were Bangalore's mainstay slowed. Soon they were displaced by firms that used newer technologies, such as computer and software companies, telecommunications networking firms and specialized high-tech firms.

These changes coincided with the national government's announcement of its New Economic Policy, a sweeping program to open the Indian economy up to foreign investment and imports, and to do away with licenses and controls. This initiative not only brought in new multinational companies, it also brought a chance for many Indian high-tech professionals to return home to either start their own operations or to represent overseas computer companies.

When the Indian computer and services sector began to grow, Bangalore's public and private sector employees were among the few Indian professionals with extensive software and hardware experience, proving a ready source of expertise. Falling prices in computing, information processing and telecommunications, and an increase in computing power, increased the demand for software professionals and for different types of computer software. These falling prices also lowered the entry barriers to many aspiring software and information technology professionals, enabling them to set up independent software companies.

The increasing expertise and competitiveness of Indian software engineers prompted a large number of software firms all over the world to outsource software development and

other activities to India. With the largest concentration of high-tech firms, and comparatively better living conditions than most other Indian cities, Bangalore had the ability to attract and retain both global and local software firms and professionals. In the 1990s then, Bangalore reinvented itself, using the software industry to effectively demonstrate how a city in an emerging economy can retool, shifting from a reliance on manufacturing that was its mainstay for four decades to one based on information services.

### **Glasgow**

Glasgow has been transformed from the most concentrated center of manufacturing in Europe to a city with one of the highest concentration of service industries. After an especially dramatic decline in the early 1980s, the city's industrial leaders emphasized opportunities in the service sector. The Victorian grid city center, still largely intact, was cleaned of decades of industrial grime.

Investment was aimed at new projects—a national exhibition and conference center, an international concert hall, hotels, several museums and art galleries—and cultural events were promoted.

The national Garden Festival attracted over 4 million visitors in 1988. A year-long festival of the arts celebrated Glasgow's designation as the European Capital of Culture for 1990. This year, Glasgow was designated the United Kingdom's City of Architecture & Design, another year-long festival. Over the next three years, Glasgow will open a new £71 million science center, aimed at becoming Scotland's second largest visitor attraction (after Edinburgh Castle); a modernized national soccer stadium to sit alongside those of its two biggest clubs, Rangers and Celtic; and the largest retail development in the country at the Buchanan Galleries.

The city's tourism figures have shot up, making it the third most popular tourism destination in the United Kingdom. The film industry is growing, software has created 2,000 new jobs and, since 1993, Glasgow's overall employment has been rising faster than most other cities in the United Kingdom.

City leaders, working together in a formal Glasgow Alliance, see prospects in exploiting research from the city's three universities. Biosciences and optoelectronics are two of the most promising disciplines. Developing more diverse housing stock is aimed at bringing people back into the central city. All these are signs that, while there is much yet to be done to overcome the damage done by the city's rapid restructuring, there is a strong will to do the job. (Urban Age)

## IMPLICATIONS:

Earlier cities used to promote economic growth by competing exclusively for industries. The usual way to do this was by capitalizing on a suitable labor force or proximity to raw materials. For example, Singapore promoted transportation in its earlier days by capitalizing on its excellent port and facilities.

“Now cities and local areas promote economic growth differently. **Rather than promoting industries, they create an environment that supports specific corporate functions,** says Dan Malachuk, managing director of Arthur Andersen's Business Location Services. A city or region competing for operational or customer service centers, for example, has a significantly different profile than an area seeking to attract manufacturing plants or headquarters sites. Workforce suitability, cost of living and political climate are but three of many factors that compel companies to locate specific functions in different areas. In the United States, many cities and regions today compete aggressively for back office, customer service and "call" centers that have become the backbone of local economies, driving significant job creation. The deregulation of telecommunications and improved equipment will further accelerate such a trend.”  
(See appendix below)

## Appendix – The Disaggregation of the Corporation

With modern technology and transportation serving as enablers, companies increasingly separate business functions to capture location benefits specific to these activities. Indeed, the "disaggregation" of the corporation is one of the most significant trends in business location globally, as well as one of the most important options available to companies today. Some notable consultants contend that companies should develop a strong "home base" before venturing cautiously to separate functions. The benefits of positioning business functions in locations with the most beneficial attributes is often too alluring to pass up, however. Separating business functions—while developing the critical links needed for the organization to function coherently as a whole under a single mission—may be a "best practice" for many, but not all, international companies.

The changing nature of work provides the basic framework for examining how business location needs vary for different corporate functions. The four primary business functions—headquarters, operations/back office, research and development and work — call for varying types of location support. (Arthur Anderson)

### **Function - Headquarters**

Definition:

Direction, strategy and vision

Current needs:

- Top notch industry talent
- Excellent air service
- Professional support services (e.g., legal, accounting, consulting, banking)
- Industry associations and networks
- Cultural and recreational amenities
- Reasonable cost-of-living
- Capital markets
- Proximity to core competencies

Future changes:

- Increasing amounts of global travel
- Greater emphasis on point-to-point air service
- Shrinking size of headquarters – purely planning and strategic functions, less operational
- Headquarters is a function not a place
- Increasing need for multi-cultural talent
- Increasing need for local amenities that appeal to an ethnically diverse population

## **Operations center/Back-office**

Definition:

Information factory and customer support center

Current needs:

- Availability of a quality labor force critical
- Functional skill base important (e.g., accounting, systems, finance, customer service)
- Competitive labor costs
- State-of-the-art telecommunications infrastructure
- Affordable living costs

Future changes:

- Outsourcing – services are becoming industries
- Span of control determining eligible Activities
- Increasing skill needs as “higher-level” factories are created
- Creation of multi-lingual center
- Continental centers
- Continued movement across national boundaries of activities to “best” locations vs. establishment of center on a national basis
- Continued downsizing through technology
- Need for “binding” culture
- “Moving work” across time zones



## **Research and Development**

Definition:

Invent, design and develop

Current needs:

- Leading edge thinkers –highly educated work force
- Clusters of talent
- Good quality of life
- Access to industry organizations
- Research university presence
- Ability to collaborate
- Diverse interests
- Environment that embraces innovation

Future changes:

- Clustering of industries
- Increasing ability to accommodate non-traditional
- lifestyles and work patterns
- Continued need for face-to- face interaction of development teams
- Closer proximity to market
- Increasing need for “D” to be near production because of shorter development cycles

## **Manufacturing**

Definition:

Factories, assembly lines and clean rooms

Current needs:

- Necessary infrastructure (e.g., highways, rail, port)
- Good labor management relations
- Skilled labor force
- Access to suppliers and raw materials
- Competitive labor and occupancy costs
- Cheap electricity for heavy manufacturers
- Market access for “local-oriented” producers

Future changes:

- Global access becoming more important (sourcing & markets)
- Economic nationalism
- Closer proximity to markets
- Higher-level skills and accountable attitudes to fit into self-directed teams

**Headquarters**—Since the role of a headquarters and its staffing vary considerably, the location attributes needed to support this mission vary as well. Nevertheless, headquarters sites have been downsized drastically in recent years, and that trend will clearly continue. As the source of vision, strategy and leadership, the headquarters location of the future may be more a function than a place.

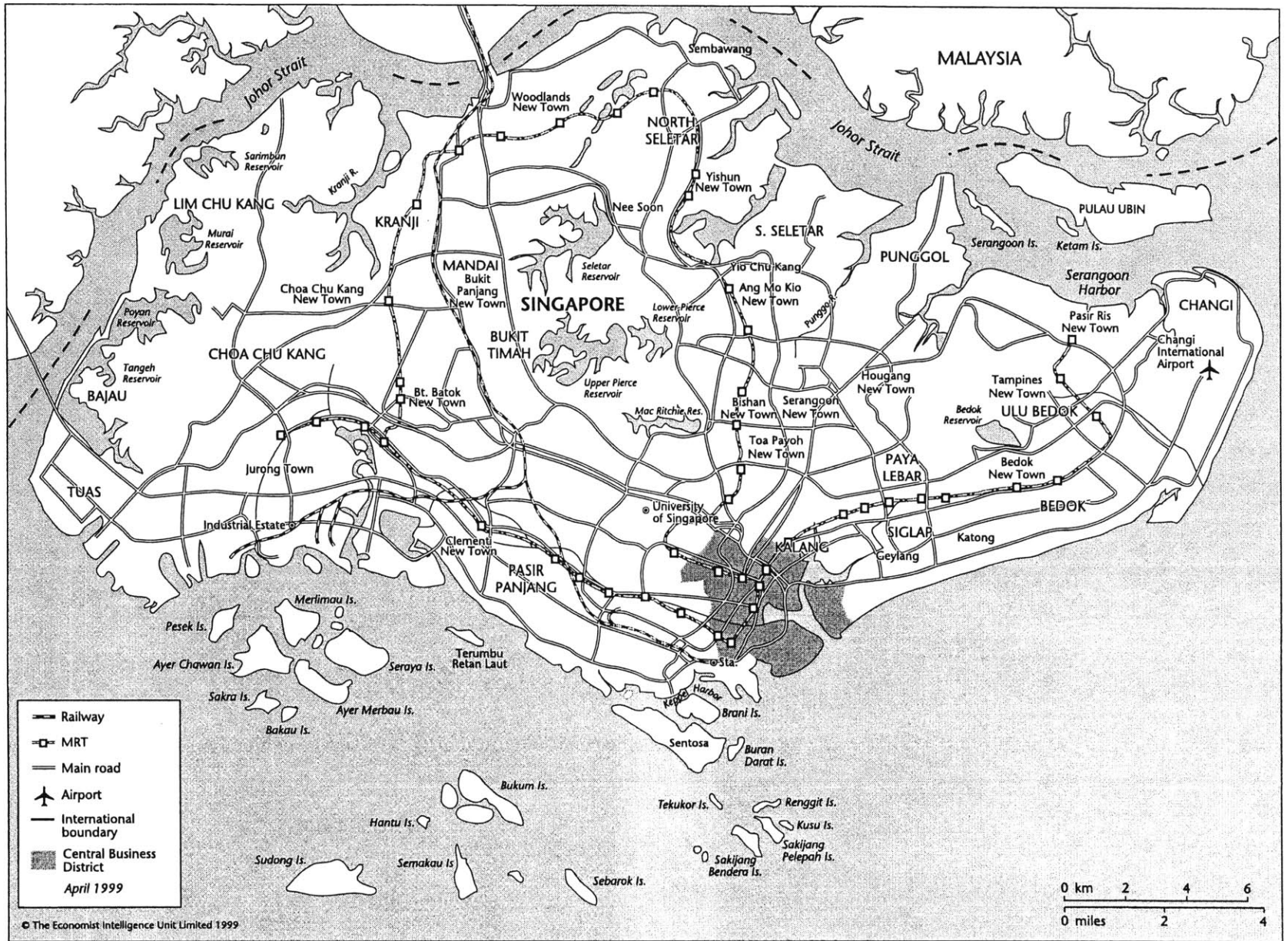
Cities and regions attempting to attract headquarters sites need to understand the key attributes required by companies. Among the most important factors are professional services support and an environment that allows companies to attract top flight personnel, which are increasingly multi-cultural. Cultural and recreational amenities enhance a city's attractiveness for this function. Excellent global air transportation is generally also essential. From the corporate side, the marginal cost of a more expensive headquarters location may not make a material difference. Companies can calculate the amount of additional revenue needed and determine whether there is a long-term strategic impact that accrues from being in a place that enables recruiting and retaining the talent needed to generate that revenue. ABB's incremental cost of being headquartered in Zurich is a small price to pay if their other strategic needs are served.

**Operations/Back Office**—Job content for back office and customer service activities varies considerably, but technology continues to transform these operations worldwide. Some companies find current work forces adapt well to these changes; others decide that a new start offers a markedly better business solution. Operations and customer service functions rely heavily on a quality labor force with functional skills that span accounting and finance to customer service. State-of-the-art telecommunications is clearly critical, as are affordable living costs and competitive labor rates. Significantly, the search for lower costs and well-qualified employees are not incompatible. Companies find advantages in places with relatively low housing costs, strong community college or post-baccalaureate training programs, and marked underemployment in retail and other services. The growth of service center clusters in the U.S. mountain West, the Canadian Maritimes, the Netherlands and the United Kingdom all reflect the presence of modern, telecom investments, as well as what might be described as a community ethos that prizes customer service. LL Bean, for example, has been able to bring its core service orientation from the small town of Freeport, Maine, to Tokyo, Japan.

**Research & Development (R&D)**—The clustering of research-related activity in the well-known technology capitals appears to be well-established and workable. Technology has given companies new ways to be closer to the customer, but face-to-face contact still counts. R&D activities appear to require that people work in proximity for the creativity, camaraderie and the cross pollination of ideas—at least to a certain extent. In the future, an emphasis on the "development" portion of the R&D equation will require that these activities be located in proximity to production functions. For a company with short product cycles, the challenge is to find places that provide both competitive production economics, and an attractive environment for recruiting and retaining engineering talent. And for both the "research" and "development" sides of the equation, companies need to distinguish between how much high-end talent they need and where a middle-brow technology center might suffice. The top of the research hierarchy may remain in

proximity to the leading research universities of the world. But, for R&D engineers who do not command the highest levels of compensation, the more affordable technology centers—such as Raleigh, Austin and Phoenix in the United States, and Aachen, Germany, and Heerlen, The Netherlands, in Europe—will undoubtedly be sustained and replicated.

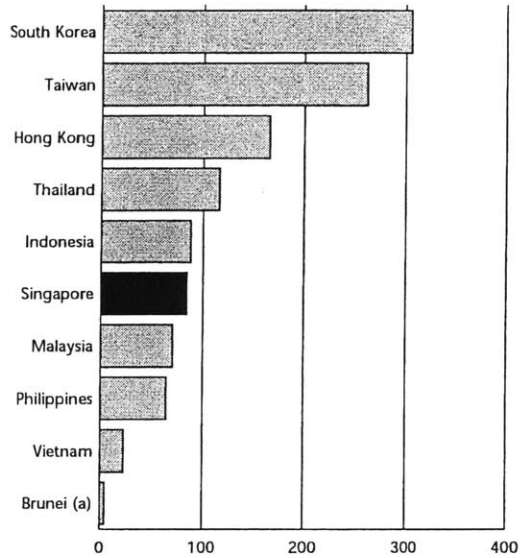
**Manufacturing**—Where products are manufactured involves familiar assessments of sources of raw materials, markets, logistics, costs and labor quality, cost and availability. These assessments can and do change as a result of changes in a company's community, and its industry, as well as the internal strategic response. In the future, location decisions regarding manufacturing facilities will increasingly involve global assessments of whether locations can sustain the infrastructure and energy sources critical to manufacturing processes. As companies expand into Viet Nam, for example, their location options are constrained not just by specific government planning requirements, but by the practical limits of few places with appropriate infrastructure. In all of the emerging markets, such is still the case. Economic nationalism also becomes more crucial as countries adopt regulations to control participation of domestic "partners," with the general intent that these countries or local areas share in the economic gain. There will be continuous government pressure to produce markets where companies plan to sell products. And, while in some industries, there is a continuous search for low cost labor, the magnet of most international investment seems to be the size and growth of the regional market itself, rather than to export back home. The attention companies pay to logistics often begins at the back door—the "distribution" side of the house. The distribution decisions are dictated by the drive to deliver value. This is increasingly the case with just-in-time delivery demanded by retailers and industrial customers, and with global markets being served from "best places" for producing.



## Comparative economic indicators, 1998

### Gross domestic product

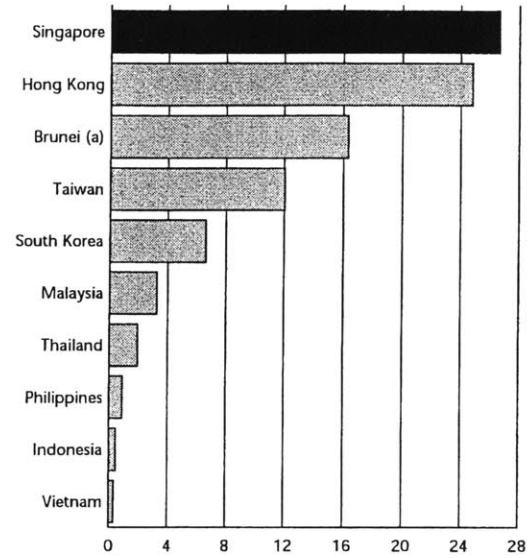
\$ bn



(a) 1995.  
Sources: EIU estimates; national sources.

### Gross domestic product per head

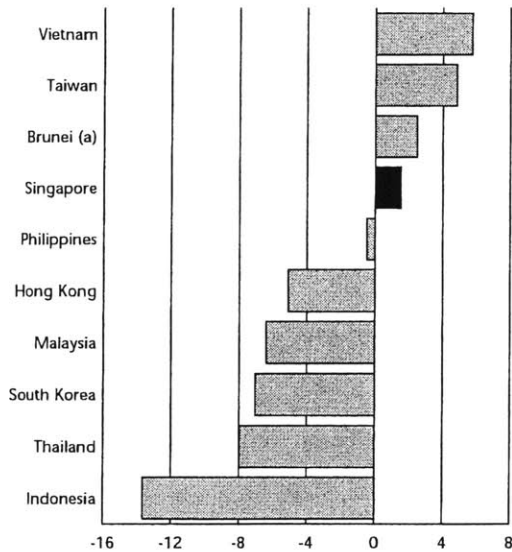
\$ '000



(a) 1995.  
Sources: EIU estimates; national sources.

### Gross domestic product

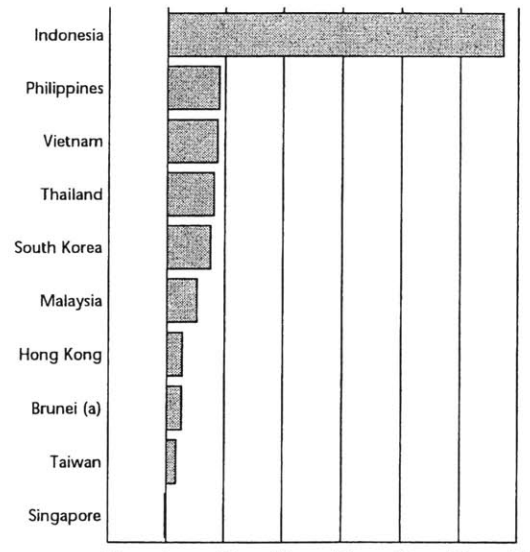
% change, year on year



(a) 1997.  
Sources: EIU estimates; national sources.

### Consumer prices

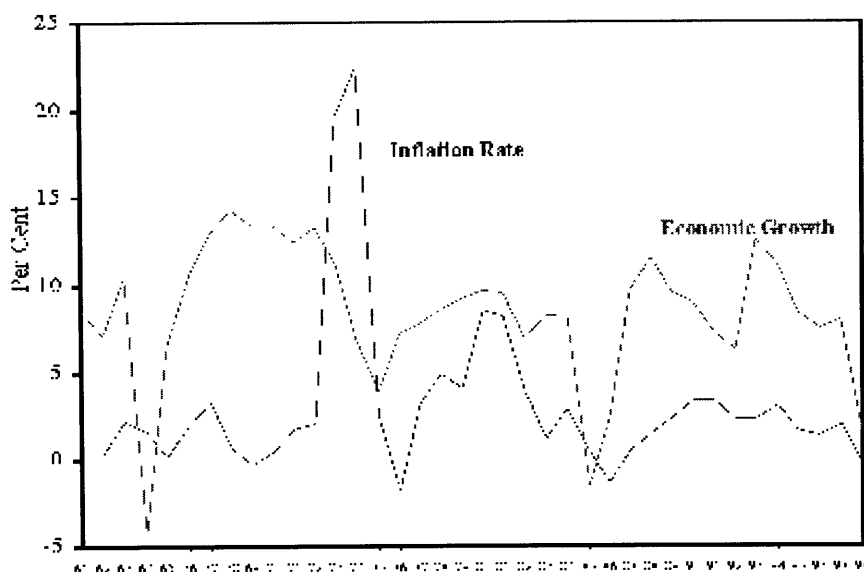
% change, year on year



(a) 1996.  
Sources: EIU estimates; national sources.

#### 4.1 Singapore's Economy Background –

### Economic Growth and Inflation Rate



### External Trade s\$ Billion

|                      | 1960  | 1970  | 1980  | 1990   | 1998   |
|----------------------|-------|-------|-------|--------|--------|
| <b>Exports</b>       | 3.48  | 4.76  | 41.45 | 95.21  | 183.76 |
| - Domestic Exports   | 0.22  | 1.83  | 25.80 | 62.75  | 105.92 |
| - Re-exports         | 3.26  | 2.92  | 15.65 | 32.45  | 77.85  |
| <b>Imports</b>       | 4.08  | 7.53  | 51.35 | 109.81 | 169.86 |
| <b>Total Trade</b>   | 7.55  | 12.29 | 92.80 | 205.02 | 353.63 |
| <b>Trade Balance</b> | -0.60 | -2.78 | -9.89 | -14.60 | 13.90  |

### Exchange Rates

(Average) S\$ per

|                          | 1980   | 1990   | 1998   |
|--------------------------|--------|--------|--------|
| <b>US Dollar</b>         | 2.1412 | 1.8125 | 1.6736 |
| <b>Sterling Pound</b>    | 4.9777 | 3.2262 | 2.7722 |
| <b>Deutschemark</b>      | 1.1805 | 1.1223 | 0.9522 |
| <b>100 Japanese Yen</b>  | 0.9475 | 1.2548 | 1.2823 |
| <b>Malaysian Ringgit</b> | 0.9839 | 0.6702 | 0.4271 |

## Economic Growth and Inflation Rates

% pa

|                        | 1960-70 | 1970-80 | 1980-90 | 1990-98 |
|------------------------|---------|---------|---------|---------|
| <b>Economic Growth</b> | 9.2     | 9.0     | 7.3     | 7.8     |
| <b>Inflation</b>       | 1.2     | 6.5     | 2.2     | 2.0     |

## Composition of Nominal Gross Domestic Product Per Cent

|  | 1960 | 1970 | 1980 | 1990 | 1998 |
|--|------|------|------|------|------|
| <b>Manufacturing</b>                     | 11.7 | 20.2 | 28.0 | 25.9 | 21.9 |
| <b>Construction</b>                      | 3.5  | 6.9  | 6.2  | 5.3  | 9.4  |
| <b>Commerce</b>                          | 33.0 | 27.4 | 20.8 | 18.0 | 16.6 |
| <b>Transport &amp; Communications</b>    | 13.6 | 10.7 | 13.5 | 12.5 | 10.5 |
| <b>Financial &amp; Business Services</b> | 14.4 | 16.6 | 19.0 | 25.6 | 29.2 |
| <b>Others</b>                            | 23.8 | 18.2 | 12.5 | 12.7 | 12.4 |

### Features:

Singapore has a highly industrialized economy; agriculture and mining are of minimal importance. **Financial and business services and manufacturing are by far the most important sectors** (manufacturing accounted for 23.1% of GDP in 1998, in current prices, compared with 30.9% for financial and business services.)

### Manufacturing

The most important manufacturing sector is **electronics**: electronic products accounted for 49.4% of manufacturing output in 1998. Singapore is the world's leading producer of disk drives, and there have been significant investments in wafer fabrication plants.



#### Foreign Trade

**The country is exceptionally dependent on foreign trade.** The total value of trade in goods (exports and imports) was equivalent to 250% of GDP in 1998, compared with for example Japan's 17%. This total, however, includes a large volume of re-export trade, encouraged by Singapore's location and excellent port facilities. Re-exports accounted for 42% of total exports.

#### Industrial Base

Singapore's industrial base is **dominated by foreign multinationals and a few large domestic firms with strong government links.** Small and medium sized enterprises (SMEs) play only a minor role, in spite of government efforts to encourage them. (Economist country report 1998)

## **RISE OF SINGAPORE**

Singapore has achieved remarkable industrial growth over the last 36 years, with real manufacturing Gross Domestic Product (GDP) averaging nearly 10 per cent per annum from 1960 to 1996 (Wong et al, 1997). While the early stages of industrial growth has been based mainly on labour-intensive manufacturing activities, Singapore's industrial expansion in recent years has been increasingly driven by technology-intensive industries like semiconductor fabrication; assembly and testing; computer and peripherals; industrial machinery; precision engineering; industrial chemicals and scientific instruments. Singapore has also become the fourth largest producer of electronics-related goods in the world (OECD, 1997a).

### **Main Issues**

Despite such creditable performance, Singapore still lags significantly behind the advanced industrial nations in terms of indigenous technological capability. Unlike Korea and Taiwan, where industrial growth has been spearheaded mainly by indigenous firms, Singapore's manufacturing sector has been heavily dependent on foreign multinational companies (MNCs). About three-quarter of Singapore's manufacturing output in recent years were contributed by MNCs, and foreign capitals constituted more than 60 per cent of the equity capital of manufacturing firms in Singapore (Wong et al, 1997).

The Singapore economy is heavily dependent on exports of electronics (58% of domestic exports). Its exports are heavily dependent on global demand for electronics amid intensifying competition between regional producers. It has great exposure to dramatic technological changes in industry, any development for example, which reduced the need for disk drives would pose serious problems. (Economist report 1998)

**How can Singapore increase solve this (in particular - the dependence on one particular industry and rate of technological progress)? (notes from Kristin Forbes)**

- Human capital and quality of labor force
- Openness and trade
- Economies of scale; improve capacity utilization
- Legal and competitive environment, infrastructure
- Spending on R&D; imitation
- Reallocate resources more efficiently within the economy
- Encourage risk taking and venture finance

Around the world, no self-respecting politician lacks a plan to turn his or her city into a capital of finance. From Pittsburgh to Bombay every mayor heralds their city as the center of finance – recently the mantra has changed to venture finance. I will now show why and how venture finance fits in very nicely with Singapore.

Singapore knows that the world has changed and so must its strategy. That is why it is changing its strategy to become a center for excellence for the function of venture finance. And that is why it is promoting an environment conducive to venture finance. (refer to appendix for conceptual framework)

It also wants venture finance to be one of the backbones of the local economy, driving significant job creation. “One has to (also) take into account the enormous prestige that comes with being an acknowledged center of finance and accumulation, says noted sociologist Saskia Sassen.

Singapore hopes to do the same in finance and with venture finance in particular. Singapore hopes its strong presence in asset management and banking, will generate innovation and new industries. Singapore hopes that it will become the hub of innovation, asset management and venture finance.

### **4.3 Financial Center Development**

#### **History**

As a result of its strategic location and well-developed infrastructure, Singapore traditionally had been the trade and financial services center for the region. In the 1970s, the government identified financial services as a key source of growth and provided incentives for its development. By the 1980s, the focus was on further diversification, upgrading, and automation of financial services. Emphasis was placed on the development of investment portfolio management, securities trading, capital market activities, foreign exchange and futures trading, and promotion of more sophisticated and specialized fee-based activities.

Consequently, by the mid-1980s, Singapore was the third most important financial center in Asia after Tokyo and Hong Kong. The financial services sector, having sustained double digit growth over the previous decade, accounted for some 23 percent of GDP and employed approximately 9 percent of the labor force. In 1985, however, growth in the sector slowed to just 2.6 percent, and in December of that year the Stock Exchange of Singapore suffered a major crisis, which forced it to close for three days. In view of the troubled domestic economy, observers worried that Singapore's future as a financial center looked somewhat problematic. Furthermore, international financial market deregulation threatened to create an environment in which it would be more difficult for Singapore to thrive, especially given its high cost structure and somewhat heavy-handed regulatory environment. The government took steps to correct some of the problems, and by 1989 Singapore's financial service sector could again be described as "booming."

### **Current Overview**

Singapore is an established financial center. The financial services sector has consistently grown faster than the rest of the Singapore economy (15 per cent in 1997), spurred by Singapore's sound economic and financial fundamentals and its attractiveness as a base for financial institutions.

Singapore is the fourth largest foreign exchange trading center in the world, the fifth largest trader in derivatives and the ninth-largest offshore lending center.

There are more than 700 financial institutions, local and foreign, in Singapore. They range over a wide selection of financial services, including trade financing, foreign exchange, derivatives products, capital markets activities, loan syndication, underwriting, mergers and acquisitions, asset management, securities trading, financial advisory services and specialized insurance services.

Singapore comes behind only London, New York and Tokyo in foreign exchange trading, with an average trading volume of US\$167 billion in 1997. The Asian Dollar Market is one of the premier offshore banking centers in Asia. The Stock Exchange of Singapore (SES) is a leading stock market in Asia and the Singapore International Monetary Exchange (SIMEX) has grown into one of the world's leading derivatives exchanges.

The number and type of financial institutions in Singapore at the end of July 1999 was:

|                        |     |
|------------------------|-----|
| Banks                  | 141 |
| Merchant Banks         | 66  |
| Finance Companies      | 14  |
| Money Brokers          | 8   |
| Stockbroking Companies | 77  |
| Investment Advisors    | 145 |
| SIMEX Members          | 69  |
| Insurance Companies    | 15  |

### **Future:**

The globalization of markets and technological advances allow liquidity to flow easily to where there are greater efficiencies and lower trading costs. In Europe and the United States, alternative trading systems are making aggressive inroads into the turf of traditional exchanges, and even of intermediaries. Increasingly savvy companies are seeking listings on foreign boards to obtain the best possible valuation and liquidity. "Unless Singapore's capital markets meet the new standards of performance, more local companies will be listed on foreign exchanges. Local investors will bypass the home exchange and local intermediaries, and trade Singaporean companies' stocks through foreign trading houses," said DPM Lee Hsien Loong at the launch of the Singapore Exchange on 01 Dec 1999.

## Conclusion

Singapore knows that its future lies in operating and competing in the global marketplace. This has led to a major thrust to build Singapore's information technology capabilities and develop a world-class financial center. (The Singapore financial services industry has grown at rates ahead of Singapore overall growth in recent years and now accounts for 12 per cent of GDP.) Its strategy of focussing on venture finance is a win-win strategy, because it will generate sticky spillovers not only in financial services which is growing rapidly, but also in manufacturing and technology.

All this will make the economy of Singapore even more healthy. It will reduce Singapore's dependence on disk drives and multinationals while at the same time encourage small and medium size businesses.

## **Technopreneurship**

Singapore is therefore promoting venture capital and its own brand of entrepreneurship – 'technopreneurship.' I quote from 'How is Singapore trying to Foster "Technopreneurship"?' (European Venture Capital Journal; London; May 1, 1999; Jennifer Jury;)

### **Some Key Initiatives To Become A Venture Capital Hub**

#### **1) One Billion \$ Fund**

As part of a plan to encourage what it calls "technopreneurship", the government of Singapore has launched a \$1 billion (euro 934 million) venture fund to shift the city-state to an "advanced knowledge economy" from a manufacturing economy, said Deputy Prime Minister Tony Tan Keng Yam. Minister Tan announced the Technopreneurship Fund in April. The vehicle aims to attract more venture capital activity to Singapore by targeting venture capitalists, lawyers analysts and investment bankers both domestically and internationally. Singapore currently has more than a dozen firms active in the venture capital sphere.

#### **2) Education and change in mindset**

The government will improve research facilities and upgrade curricula and teaching practices at technical universities. To build a critical mass of technopreneurial talent, a special ministerial committee chaired by Mr Tan will conduct a systematic and comprehensive review of Singapore's education facilities, regulations and financing. Mr Tan said: "Education is a crucial component of the strategic plan. To build up a technopreneurship sector in Singapore has announced tie ups with several prestigious technical institutes like MIT.

Boosting Singapore's entrepreneurial activity would require an adjustment in cultural thinking, so citizens can accept failure as "a learning process", Minister Tan said, adding "We need to infuse in our people a culture of innovation and enterprise, and a readiness to take calculated risks". This change in culture is a very important fact of venture finance. Only a third of venture firms are successful. Therefore if Singapore wants to develop itself as a center of venture finance it has to encourage the culture of failing, it will have to change difficult cultural aspects like encourage the reemployment of people who have failed in an earlier ventures. Ta-Lin Hsu, chairman of Hambrecht & Quist Asia Pacific, questioned the wisdom of raising a Singapore venture fund, saying the nation already has too much capital and too few investment opportunities. Instead, Ta-Lin Hsu suggested that the government should deliver a regulatory environment that would encourage venture capitalists and entrepreneurs. One can also take the example of Singapore Technologies, the government backed venture capitalist which invested around \$100 million in almost all IBM cloned companies that failed. Therefore one needs to be careful of excessive government intervention.

### 3) Special government committee

"We need to infuse in our people a culture of innovation and enterprise and a readiness to take calculated risks." A private sector committee has also been set up to advise the government on necessary policy changes. It will be headed by Singapore's number one technopreneur, Creative Technology founder and chairman Sim Wong Hoo. Mr Sim said: "There are quite a lot of rules and regulations in Singapore meant for bringing up the nation to what we are today. "To be entrepreneurs, many of these rules need to be changed. In the early days of Creative [in the 1980s], we confronted many of these obstacles."

### 4) NSTB

The National Science and Technology Board, headed by Teo Ming Kian, will lead the technopreneurship drive. Mr Teo said: "In Singapore today we have no lack of money, but there may be a lack of people to assess and value intellectual property and therefore willing to invest in them."

### 5) EDB

The EDB said it will continue to actively promote the industry through its Venture Capital Program, which has been in place since 1985. For the first 10 months of the year, the agency said it awarded tax incentives to several new venture capital fund management programs, that collectively will raise more than S\$600 million in new funds.

### 6) Tax Incentives

The EDB, in concert with the Ministry of Trade and Industry and the Ministry of Finance, have tailored specific tax incentives to accelerate the growth of venture capital funds and fund managers, it said. "We see venture capital playing an important role in helping local enterprises grow, in addition to promoting entrepreneurship and innovation," said Liew Heng San, the EDB's managing director. " Venture capital funds are even more relevant when traditional sources of capital are harder to come by."

### 7) Attract Outside entrepreneurs

In addition to changing the attitudes of its citizens to technological entrepreneurship, Singapore wants to attract outside entrepreneurs, especially innovators from other Asian countries. Minister Tan reasoned that Singapore, which enjoys a stable government, high living standards and good schools, offers an attractive environment to entrepreneurs who are willing to relocate.

### **Support so far**

The agency said start-up companies continued to receive strong support from venture capital investors this year. Half of the 35 local companies that received funding this year were new, it added. These start-up investments made up 25% of all venture capital investments in Singapore dollar terms this year, the agency said. The EDB said technology-oriented companies received the strongest support from venture capital funds, with two-thirds of all investments made in such industries as information technology, communications and media and electronics, and an emphasis on the local IT industry. (Dow Jones News 12-30-98)



## Table of Financial Sector Reforms & Update

Having a sound financial sector is key to being a thriving venture capital center. That is why the Monetary Authority of Singapore has undertaken these key initiatives.

### Review Of The Financial Sector: Key Initiatives Implemented To-Date

| Banking   | Insurance   | Fund Management   | Equity and Futures Markets   | Bond Market  |
|---|---|---|--|--|
| <b>Raised Bank Disclosure Standards</b><br><br>Discontinue practice of maintaining hidden reserves.<br><br>Provide details on loan loss provisions.<br><br>Disclose off-balance sheet items in notes to accounts.<br><br>Disclose significant exposures.<br><br><b>Clarified and Liberalised Guidelines on S\$ Loans for Regionalisation Projects</b><br><br><b>Lowered Minimum Cash Balance (MCB) from 6% to 3%</b><br><br><b>Raised Limits on Offshore Banks' S\$ Loans to Residents from \$200 mn to \$300 mn</b><br><br><b>Launched Real Time Gross Settlement System for Interbank</b> | <b>Liberalised Investment Limits on Singapore General Insurance and Non-Investment-Linked Life Insurance Funds</b><br><br><b>Put in Place Easier Operating Environment for Captive Insurers</b><br><br>Reduced paid-up capital requirement from \$1 mn to \$400,000.<br><br>Captive insurers allowed to write prescribed non in-house risks.<br><br><b>Enhanced Tax Incentives</b><br><br>Extended 10-year tax exemption for Singapore-registered insurers in respect of income from offshore marine hull and liability business. | <b>Committed to Place Out \$25 billion of GIC Funds and \$10 bn of MAS Funds over Next 3 Years for External Fund Managers to Manage</b><br><br>[GIC placed out \$6.5 bn as at September 1998.]<br><br><b>Revamped CPF Investment Scheme</b><br><br>Set new selection criteria for CPF-approved fund managers.<br><br>Set new investment guidelines and introduced disclosure requirements for CPF-approved unit trusts.<br><br><b>Liberalised Guidelines for Non-CPF Unit Trusts</b><br><br>Introduced new investment, borrowing and advertising guidelines.<br><br>Removed minimum investment requirements for unit trust regular savings plans.<br><br>Reduced Entry Requirements for Foreign Companies | <b>Eased Conditions for Foreign Companies to List in S\$ on the SES (See MAS 757)</b><br><br><b>Removed Limit on Investments in Foreign Currency-Denominated Shares by CPF-Approved Unit Trusts</b><br><br><b>Launched New Equity Derivative Contracts</b><br><br>SIMEX launched MSCI Singapore Stock Index Futures (in September 98) and Dow Jones Thailand Stock Index Futures (in November 98). SIMEX relaunched MSCI Hong Kong Stock Index Futures in November 98.<br><br><b>Widened Scope of Activities for Stockbrokers</b><br><br>Reviewed SIMEX membership structure to allow SES members to apply for SIMEX membership so as to market and trade SIMEX's equity index contracts.<br><br>Facilitated applications by stockbroking firms for investment adviser licences.<br><br><b>Introduced New Best Practices Guide on Audit Committees and</b> | Increased Government Debt Issues and Announced a Regular Calendar of Issues<br><br>Issued \$1.5 bn of 10 year Singapore Government Securities (SGS).<br><br><b>Increased Bond Issues by Statutory Boards like JTC, PUB, and HDB</b><br><br>JTC launched \$4 bn medium-term note programme. HDB announced plans to issue \$2 bn worth of bonds.<br><br><b>Allowed Foreign Entities to Issue S\$-Denominated Bonds in Singapore (See MAS 757)</b><br><br>International Finance Corporation launched the first triple A S\$ bond issued by a foreign borrower in October 98.<br><br><b>Allowed Banks to Transact S\$ Repurchase Agreements of up to \$20 mn with Non-Bank Non-Residents</b><br><br><b>Allowed Banks to Transact S\$ Currency and Interest Rate Swaps with Special Purpose</b> |

|   |  |  |  |   |
|---|--|--|--|---|
| <p><b>Payments Facilitated Regulatory Co-operation</b></p> <p>Made it easier for foreign regulators to inspect Singapore branches of their banks</p> <p>Allowed foreign banks to disclose information on credit facilities to their parent supervisory authorities.</p> |  | <p>Setting Up as Investment Advisers in Singapore</p> <p>Reduced minimum shareholders' funds from \$500 mn to \$100 mn.</p> <p>Reduced minimum global funds managed by parent company from \$5 bn to \$1 bn.</p> <p><b>Enhanced Tax Incentives</b><br/>Abolished withholding tax on unit trust distributions.</p> <p>Extended tax exemption to unit holders' distributions made out of capital gains.</p> <p>Exempted from tax fund managers who manage more than \$5 bn in Singapore.</p> | <p><b>Dealing in Securities</b></p> <p><b>Legalised Share Buy-Backs</b></p> <p><b>Commenced Inspection of Securities Market Intermediaries Enhanced Tax Incentives</b></p> <p>Extended certain tax incentives for venture capital funds for a further 5 years beyond the current maximum of 10 years.</p> <p>Renewed tax holiday for SIMEX for another 5 years.</p> <p>Suspended stamp duty on securities transactions for 1 year wef 30 Jun 98.</p> | <p><b>Vehicles for Securitising Mortgages</b></p> <p><b>Allowed CPF-Approved Unit Trusts to Invest in High Grade Bonds Introduced Tax Incentives to</b></p> <p><b>Encourage Origination and Trading of Debt Securities in Singapore</b></p> |
|---|--|--|--|---|

### Key Initiatives Currently Being Worked Out

| <b>Banking</b>  | <b>Insurance</b>   | <b>Fund Management</b>  | <b>Equity and Futures Markets</b>   | <b>Bond Market</b>   |
|---|--|---|---|--|
| <b>Implement Risk-focused Approach to Bank Examinations</b><br><br>Conduct more focused and regular inspections to distinguish stronger banks from weaker ones. | <b>Review Investment Guidelines for Investment-Linked Insurance Policies</b><br><br><b>Enhance Operating Environment for Captive Insurers</b><br><br><b>Introduce New Reinsurance Products</b><br><br>Study the actuarial and accounting issues relating to the introduction of specialised pioneer products such as alternative risk transfer products. | <b>Consolidate Unit Trust Regulation in MAS</b><br><br><b>Review Trustees Act</b><br><br>Relax investment restrictions on statutory boards, private pension funds and authorised unit trusts.<br><br>Delink investment limits under CPFIS from Trustees Act.<br><br>Put in place regulatory framework for private pension funds.<br><br><b>Introduce Regulatory Framework for Independent Financial Advisers</b><br><br><b>Introduce Code of Ethics for Fund Managers</b><br><br><b>Create Conducive Environment for Indigenous Boutique Fund Managers</b><br><br><b>Introduce Training Programmes to Develop Local Fund Management Expertise</b> | <b>Progressively Deregulate Commission Rates</b><br><br><b>Progressively Open Up to Foreign Participation in the Stock-broking Industry</b><br><br><b>Liberalise Employee Share Option (ESOP) Schemes</b><br><br><b>Widen Product Range in Equity Market</b><br><br>Expand the SES options market by introducing options on more stocks.<br><br>Introduce new products (e.g. stock index options, country basket of shares, listed property trusts/real estate investment trust)<br><br>Develop an electronic bulletin board/organised OTC market on SES for trading foreign securities.<br><br><b>Demutualise and merge SES and SIMEX</b><br><br><b>Shift from Merit-Based Regulation Towards Predominantly Disclosure-Based Regulation</b><br><br><b>Consolidate Securities Regulation in MAS to Reduce Duplication</b> | <b>Promote Asset-Backed Securities Market</b><br><br>Resolve legal and regulatory issues relating to asset-backed securities.<br><br>HDB is considering the issuance of mortgage-backed securities.<br><br><b>Introduce Regulatory Guidelines for Underwriters and Dealers and Trading Rules for Debt Securities</b><br><br><b>Develop Efficient Clearing System for Corporate Bonds</b> |

## **Conclusion**

### **Venture capital going forward**

Singapore has very successfully made the transition from a trading center to regional hub for multinationals and from banking center to asset management center. It now wants to go from financial center to center of venture finance.

Mr Liew Heng San, Managing Director of the Economic Development Board (the body in charge of Singapore's push into venture capital) emphasized the importance of VC, "Singapore's vibrant VC industry will not only support entrepreneurship in Singapore, but also help fund technology-related companies that will help bring about a Knowledge Based Economy."

I think it sees the time zone factor is more important now in the age of digital technologies. It realizes the financial services industry has changed and with that its strategy to be a center of finance. Plus there are enormous spillovers to the economy from adopting such a strategy and being the center of finance.

### **Additional benefit of Venture finance**

#### **Sticky Spillovers - Transition from Manufacturing Hub to Design Hub**

A recently released government blueprint for Singapore's high-tech sector indicates that the island nation could be looking to transition from manufacturing hub to international design center. The blueprint sees Singapore expanding from its manufacturing and production roots to build a knowledge-based economy more dependent on high-value-added, knowledge-driven industries.

Lee Yock Suan, Singapore's trade and industry minister, unveiled the blueprint as part of the Economic Development Board's Industry 21 plan. "Greater emphasis will be placed on human and intellectual capital that will be used as leverage on science, technology and innovation," he said.

Compaq is one of many multinational companies eyeing Singapore as a base for designing digital products. Hewlett-Packard Co. has invested \$23 million in Singapore to develop technologies for its handheld computers. With government support, HP intends to invest more than \$180 million in R&D over the next five years.

On investment's flip side, Singapore is discouraging textile and other low-wage, low-skill industries. Such labor-intensive production is being dispatched to neighboring countries. Indeed, a decade ago, in part to encourage development of Malaysia's Johore province and Indonesia's Riau province as manufacturing centers, a three-country Southern Growth Triangle was created to relocate the industries Singapore doesn't want. Since then Singapore has promoted a similar production center in China at Suzhou, about 75 miles from Shanghai.

It has realized its increasing dependence on labor intensive manufacturing and multinationals was not a healthy thing. That is why it is promoting innovation and entrepreneurship. An additional benefit as Mr. San mentioned above, is this will encourage small and medium enterprises and higher knowledge based and skilled activities.

EDB's target for the Singapore VC industry is to achieve the following by 2005:

- Increase the number of VC professional by at least 50%,

- Double the funds managed out of Singapore and

- Expand the number of VC-backed seed stage companies by at least 300.

### **Personal Assessment**

Singapore is an interesting case study of an enlightened city-state that has done its homework very carefully. It realizes that the world is changing, and with that its strategy. Singapore also realizes that manufacturing is important and will remain important to its economy. That is why it is planning to concentrate on "manufacturing products of the future than of the past." This explains why it is also using all its resources to adopt to its new goals – venture capital being one of the lynchpins of that new plan.

However, in a country where the state and government linked companies play a 'larger than life role in many aspects of ones life' it remains to be seen if the culture of risk taking can take hold in this city-state. Risk aversion and stigma of fear as well of success are definitely some of the major obstacles to their pursuit of attaining the status of a "venture hub."

This point is summed up nicely by Long of Hewlett Packard. "I am not sure if Singapore can become the Silicon Valley of the East, but . . . it is not too far away from realizing its dream of being a knowledge-based economy, reliant on people rather than machines." An interesting area of future research would be to look at Singapore three years into the future and explore the success of government backed venture capital. One could even compare and contrast this with Bombay (the financial hub of India) which recently started making initiatives in the venture finance space.

## **FUTURE FOR CITIES AT LARGE: Cycles Of Creativity In Cities**

Historically cities have always been the centers of invention and innovation. But no one city has held a monopoly on cultural advance.

About 15 years ago, economists rediscovered Joseph Schumpeter's theories of creative destruction: economic growth, he had argued, came in bursts, each stemming from new industries that arose from basic innovations in technology or industrial organization. It's important to recognize that Schumpeter was talking about innovations, not inventions. Innovation isn't inventing things; it's turning them into products. The essence is what Schumpeter called entrepreneurship—or, in the words of the famous 1940s entrepreneur Henry Kaiser, find a need and fill it. (Most of the material in this chapter has been taken from the Urban Age.)

But there's another twist to the Schumpeterian thesis. Innovative places aren't the same from one era to another. Britain forged the first industrial revolution, but then lost the lead to Germany and America. The same applies to cities. Two hundred years ago Manchester and Birmingham were the smart places; now it's Silicon Valley.

This is no accident. In fact, cities have always been that way. From their very beginnings in the Middle East 5,000 years ago, they have been the seats of every advance in the arts, science, medicine and philosophy. Classical Athens, around 400 BC, was the scene of a unique creative explosion. Renaissance Florence pulled off the same trick almost exactly 2,000 years later. It was drama in Shakespeare's London, music in 18th and 19th century Vienna, painting in Paris around 1900 and a plethora of artists in Berlin in the 1920s.

What made these places so creative, and why did their golden ages seldom last very long? Why did so few have second golden ages, and how did those few, like London, manage to do so? Economics provides part of the explanation. These cities were both large and rich, though not always the biggest or the wealthiest of their time. They were growing rapidly, and all were experiencing rapid economic change; most were on the way to becoming capitalist cities. In all except Athens, the wealth accrued to a favored few, who were the patrons either as individuals or collectively. They were the kinds of wealthy people who had made their money recently, sometimes in very risky enterprises, and who were willing to back new and revolutionary ideas in the arts and culture.

But, as always in economics, there had to be a supply side. Mostly, the artists were also new and self-made people. Many were immigrants to the city, sometimes from the surrounding countryside, but very often from distant places in the empire which the city ruled, and sometimes even from outside. Just consider the Metics of ancient Athens, the artists who came to Florence from the countryside or from further afield, the provincial musicians of Vienna, provincial artists of Paris or the Jews in fin-de-siècle Vienna. They were all outsiders, trying to establish footholds in the city. And sometimes the patrons were outsiders too, like the non-citizen Metics in ancient Athens or the Jews in Vienna.

Both the innovators and their patrons found themselves in societies that were being radically transformed—in social relationships, in values and in views about the world. That produced enormous social and cultural tensions between an old world and a new one. And it was this uncomfortable tension that generated the artistic explosion.

When we use the word creativity, it's this artistic and intellectual genius that we think of first. But there's another kind of creativity: the kind that produces new technologies and new forms of commercial organization, generating great firms and even entire industries. And this kind is also distinctly urban. But these cities—Manchester in the 1780s, Berlin from 1840 to 1900, Detroit around 1900 or the San Francisco Bay Area around 1950—were far less well known than the artistic cities; they were upstart places where money was being made, not spent. They were full of risk-taking entrepreneurs and brilliant technicians, and it was the union of the two that produced Siemens in Berlin, Ford in Detroit and Hewlett-Packard in the San Francisco Bay Area.

And there's a third kind of creativity: the kind that provides practical and sometimes imaginative solutions to the problems that arise from rapid urban growth and urban size. Rome in the early centuries AD was an outstanding example, bringing food and fresh water to serve a million people. London and Paris in the 19th century solved the problems of public health and public order, in different but related ways. New York at the turn of the present century developed new technologies that allowed the city to grow vertically at the core, horizontally at the edge. Los Angeles a few years later rejected that image of the city, determining to be different: the first dispersed city based on universal mobility. These cities, it can be argued, did what they did because they had to. The price of failure would have been catastrophic. But many developing cities in the world today, at the end of the 20th century, do not seem to have succeeded in following them—at least yet.

The question now has to be: how will creativity manifest itself in the 21st century city? If there is to be yet another Schumpeterian burst of innovation, which may be beginning right now, what are the key new industries that will provide the basis for it?

There are at least two clear clues. One is the huge expansion of the creative and cultural industries, which are no longer the playthings of a few rich patrons but have become mass consumption industries. Seventy years ago, the economist John Maynard Keynes foretold a future in which we had solved the basic economic problem and were at last free to enjoy our leisure. That future has arrived in the developed world, and during the next century it will happen in much of the now-developing world. In the United Kingdom the cultural industries employ nearly 1 million people, some 4.5 percent of the workforce; the cultural industries are as big as the construction industries, and have grown much faster.

The other clue is that we're now seeing the convergence of artistic and technological creativity, two forms traditionally held to belong to different people and to opposite sides of the brain. During the 20th century, there have been two outstanding examples: the motion picture industry of Hollywood, from around 1910, and the popular music industry of Memphis, Tennessee, around 1955. It is no accident that both are American, because both were popular arts reproduced through new technologies, and both were created by

quintessential outsiders. Hollywood was the creation of Jewish entrepreneurs, all first-generation immigrants; Memphis music was a unique union of two strains produced by the poorest and most isolated groups in the United States, the black cotton farmers of the Mississippi delta and the white hillbillies from the Appalachian mountains to the east. They could only have come into being where social and racial barriers were weak and crumbling, and where there was an acceptance of—even a belief in—experimentation.

The new multimedia industries, the Internet and the World Wide Web, are developing through a marriage of computing and multimedia. Again it has been American ingenuity that has developed the many commercial platforms that have exploited the new technologies in the 1990s.

This is a game anyone can play, and advances are being made in Europe, Japan and Israel. But, significantly, the key locations for the new industries are often cities: Los Angeles, San Francisco, New York City, London. That is because the development of new ideas demands serendipity and synergy among minds, and it is easier to find this in great cities. It is also because there is a special relationship between multimedia and other activities that have always been clustered in great cities: the media (including the live performing arts), advertising, public relations and tourism.

Cities, at least in the developed world, are no longer locations for mass production manufacturing. They have become places for high-technology research and development and prototype production, for creative and cultural industries from theatres and museums to publishing and broadcasting, for tourism, for command and control functions in government and transnational corporations, and for specialized finance and business services. In all these, creativity plays a crucial role.

Communications—a major international airport hub, a key interchange on the fast-spreading high-speed rail systems of Japan and Europe, top-quality telecommunications—are a must. But there is another key requirement: quality of urban life. Just as cities had to guarantee pure water and sewerage systems a century ago, they now compete to make their cities attractive to visit and to live and work in.

Urban regeneration thus achieves several objectives simultaneously: it clears the ruins of the lost industrial economy, provides new flagship buildings to act as symbols of an urban renaissance, and creates a high-quality urban ambience for visitors and residents. Classic illustrations are Barcelona, Bilbao and Glasgow in Europe, San Diego, Seattle and Toronto in North America.

There are obvious lessons for the cities of the middle-income countries of Asia, Latin America and the transition economies. Some urban economies have run the entire gamut of development in a little more than a generation. Cities like Hong Kong, Singapore and Buenos Aires have moved from labor-intensive production through more sophisticated high-technology manufacturing to advanced services.



Here too, quality of urban life becomes a crucial factor. Not for nothing have Singapore and Hong Kong invested heavily in rapid transit systems, new residential areas, and extensive parks and waterfront recreation areas. But it is not just a matter of a clean and well planned modern environment, for this could produce a sterile city. Significantly, Asian and Latin American cities are increasingly protecting and restoring their historic urban patrimony; conservation is high on the agenda, in a way that would have been unthinkable 20 years ago.

Of course, urban quality does not guarantee creative genius. Increasingly, universities build laboratories to retain and attract international star scientists. Creativity is no longer an incidental miracle that happens occasionally in exceptionally favored cities; in a globalized economy where no place can rest on its laurels for long, it is now a central part of the business of being a successful city. And this is a principle that no city can safely ignore. (Peter Hall, *Cities in Civilization, Urban Age*)

## A Look At What Could Happen - One Possible Future

### **Amsterdam The Hooked Up City**

Amsterdam's Digital City (<http://www.dds.nl>) was launched in January 1994 to place about the city and its services within direct reach of the people, to stimulate political discussion among citizens and to explore the possibilities and limitations of a local virtual community.

Amsterdam is a city where bicycles outnumber automobiles, where developers' plans to alter the skyline can be thwarted by small bands of ordinary citizens, where squatters and the homeless have an unparalleled influence on their city's social and political agenda. But despite this tradition of community activism, the municipal government of Amsterdam was troubled in the early 1990s by signs of increasing political apathy and cynicism among the city's voters. On the eve of local elections in 1994, the Amsterdam City Hall decided to support the Digital City—a private initiative developed jointly by the cultural center De Balie and the computer activist foundation xs4all ("Access for All")—as a 10-week social experiment to stimulate the interest and involvement of citizens in local public affairs.

Within a week, the network's 20 phone lines were overloaded around the clock, and the new "city" had more than 3,500 "residents" and thousands more visits by "tourists."

Five years later, the Digital City is a growing network of small virtual communities with more than 100,000 regular participants and tens of thousands of tourists. The project, which has received no public funding since 1995, has had an enormous impact on the extension of not-for-profit Internet access in all of Holland, has been replicated by other cities throughout the Netherlands, and has spawned many imitators in cities across Europe.

The Digital City is constructed in the image of a real city, with squares corresponding to different themes or areas of interest (the environment, government, art, sports, Europe, alternative lifestyles, women's issues, music, etc.). Each square offers space for a fixed number of "buildings" which can be rented by businesses, nonprofit organizations or other information providers. The squares also feature billboards (advertisements), cafés (chat rooms and specialized discussion groups), kiosks (collections of on-line newspapers and magazines related to the square's theme) and side roads (related links).

Although most of the Digital City's contents are in Dutch, anyone is welcome to visit. Each resident has a free e-mail account, the right to participate in discussion groups and space to create a "home," or personal Web page. The homes are situated in residential areas between the squares and may not be used for commercial purposes.

The city metaphor reinforces the idea of the Digital City as a public domain, a forum where citizens can meet and express themselves freely. The city metaphor was also chosen to make the Digital City easier to navigate: citizens intuitively grasp that they

must stop in at the post office to send and receive (electronic) mail or visit the City Hall for information on political affairs. And although the Digital City does not correspond to the layout of the real Amsterdam, its structure lets it easily accommodate all aspects of life there. A digital bike path was added so that biking enthusiasts can meet and exchange information, reviews of newly released films can be found at the cinema square and a cemetery has even been added for the commemoration of loved ones.

Despite the project's autonomy from political influence, the city metaphor also makes explicit the political dimension that its founders have wanted for the project from the start. The government neighborhood is one of the Digital City's most popular areas, and visitors there can read the fine print of proposed laws and upcoming referenda, e-mail city officials directly and argue with their elected representatives on the issues of the day. Subjects such as a controversial plan to extend Schipol Airport, upkeep of the city's parks, whether to ban cars from the city center, the proposed conversion of Amsterdam from city to province and other local political issues have been debated. Politicians frequently participate in more structured discussion formats as well.

The Digital City has become a true city, dynamic and creative, where houses, buildings and squares are constructed, demolished or abandoned every day. And it is this organic quality that distinguishes Amsterdam's Digital City from many of its counterparts elsewhere. Digital city projects in the United States, for example, tend to be more rigidly structured and primarily serve as clearinghouses of information for the city and its service providers. The organizers of Amsterdam's Digital City see their project more as an "open city" than as an organized virtual community. In the Digital City, residents are not passive consumers of information and services but full citizens who provide information and services as well. The successful Clean Clothes campaign against the local sale of clothes produced by child labor in Asia is one example of how ordinary citizens in Amsterdam have been able to use the format provided by the Digital City to inform their fellow citizens and bring about change on both local and global levels.

The political results of the Digital City are, however, still far from the electronic democracy for which its founders were hoping. The real influence of virtual debates on traditional politics has been minimal, and most visitors are young, well-educated and highly computer-literate—a profile which corresponds to only a relatively small segment of society. But although the project's direct political impact has not been what its planners envisioned, the Digital City has brought Dutch citizens on line, enabled them to find other citizens with similar interests or concerns and provided them with a format for exchanging information and taking action. (Vechio, Urban Age)

In this thesis I have only looked at venture finance and Singapore – however, the implications for cities are large in different domains.

## **IMPLICATION CREATIVITY IN CITIES**

Creativity is the most valuable commodity in today's information economy—the key to the survival of cities. (Tim Campbell and Charles Landry)

In a world where the only constant is change itself, civic leaders within both the public and private sectors must adapt and innovate. And, due to the pace of change, leaders must learn all the time.

Today, many cities are facing difficult periods of transition. Old industries are disappearing, wealth is created less through the manufacture of material goods and more through the application of new knowledge to products, processes and services. At the same time, cities are becoming more prominent in the world political economy where the effect of decentralization has meant that cities are recognizing that they have more scope to act, more leverage to effect change.

The challenge for urban leaders is to unleash the creative potential of their populations to realize such change. Successful leaders will engage with local groups and outside agencies, receiving feedback that will further stimulate leadership and encourage prospective risk-takers. Once change has begun, a learning process can take place. Success stories (and failures) will be disseminated. Indeed, leaders will be in constant communication with their communities, mobilizing local groups to help implement small-scale projects.

Over the last 30 years or more, it has become clear that hierarchical, plan-based administrative structures (the top-down approach) are no longer able to motivate people to become competent, engaged and creative citizens. In the West especially, forms of work are based more on small, flexible units of production and less on monolithic industrial structures. Hence the importance of creativity.

Creativity is a concept that resists attempts at definition. It is an intangible quality that we attribute to human endeavor—after the fact, as it were. Acts of creativity surprise us, challenge former suppositions and shift our frames of reference. Perhaps the easiest way to delineate a concept of creativity, then, is to demonstrate by example.

The following constitutes a list of urban initiatives that are interesting and refreshing. If nothing else, they have in common the quality of breaking with tradition, of redefining the codes of governing practice:

Kathmandu, Nepal, hosts a unique competition between left- and right-handed cricketers from India and Pakistan.

A housing estate in Vienna was designed solely by women.

Ahmedabad, India, once a city on the verge of collapse due to plague, debt and a dispirited population, now attracts financial investments from international capital markets.

In Oeiras, Portugal, the normally undesirable idea of waste was turned into an asset in a backyard composting scheme.

In Cooper Pedy, Australia, houses were built underground to escape the searing heat.

Finally, in what serves as a fitting allegory for the transition to a post-industrial society, disused industrial sites in the Emscher area of the Ruhr, Germany, were reclaimed and turned into new technology parks and design centers.

Can creativity as manifested in the above examples be taught or transmitted? Can a creative milieu be fostered in cities? We might start to answer this by identifying that which stifles innovation: tight regulatory power structures, bureaucratic proceduralism, short-term thinking and too great an emphasis on competition rather than collaboration. In contrast, creativity is generated at the grassroots level, flourishes in an environment where information flows are unrestricted, can only arise in an atmosphere of tolerance toward risk-taking and experimentation, and benefits from partnership where ideas are exchanged and where leaders learn from one another.

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